DOCUMENT RESUME

ED 327 830 CS 010 387

AUTHOR Levine, Daniel U.; Sherk, John K.
TITLE Effective Implementation of a Comprehension-Improvement Approach in Secondary Schools.
INSTITUTION Missouri Univ., Kansas City. Center for the Study of Metropolitan Problems in Education.
PUB DATE May 90
NOTE 168p.; For a summary of this report, see CS 010 386. Frequent faint, blurred, smudged type.
PUB TYPE Reports - Research/Technical (143) -- Guides - Non-Classroom Use (055)

EDRS PRICE MF01/PC07 Plus Postage.
DESCRIPTORS *Instructional Effectiveness; Intermediate Grades; *Reading Comprehension; *Reading Improvement; *Reading Programs; Reading Tests; Secondary Education; Student Improvement; Teacher Effectiveness; *Urban Education
IDENTIFIERS *Degrees of Reading Power; Kansas City Public Schools MO; New York City Board of Education; Orange County Public Schools FL

ABSTRACT

This report describes in depth the implementation and impact of instructional strategies to improve students' comprehension skills at three diverse urban secondary schools. While activities and characteristics varied, educators at all three locations were implementing local variations of a school-improvement approach based on the use of the Degrees of Reading Power (DRP) approach intended to help teachers acquire and use comprehension-improvement strategies in the classroom. Following an introduction, the first chapter describes the program at the ninth-grade School-within-a-School (SWAS) program for low-achieving students in Kansas City, Missouri, high schools. The second chapter discusses the Elizabeth Barrett Browning Intermediate School 115 in the Bronx, New York (grades 6-8), while the third chapter deals with Apopka High School (grades 9-12) in the Orange County Public Schools in the Orlando, Florida, metropolitan area. The final chapter contains discussion and conclusions. The report notes that at all three schools, gains appear to have been made with respect to students' reading comprehension performance on the DRP test; and that emphasis in improvement efforts included substantial staff development, activities to motivate students, and utilization with local variations of an approach the College board developed to help teachers acquire and implement instructional strategies for enhancing students' comprehension. Three figures and 26 tables of data are included. A glossary of strategies and a list of 60 references and related materials are appended. (SR)

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EFFECTIVE IMPLEMENTATION OF A COMPREHENSION-IMPROVEMENT APPROACH IN SECONDARY SCHOOLS

Daniel U. Levine
Professor of Education

John K. Sherk
Professor of Education

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Center for the Study of Metropolitan Problems in Education
School of Education, University of Missouri-Kansas City
5100 Rockhill Road, Kansas City, (MO) 816-235-2451

CS010387

Gratitude is extended to Anita Jennings for preparing this manuscript and to Jing Liu and De Cheng for assistance in organizing and preparing data.

This study was conducted with a grant from the University of Missouri Weldon Spring Educational Fund

CONTENTS

INTRODUCTION 1
The DRP Test 2
DRP Matching of Students and Texts 4
Teachers' Utilization of Comprehension-Improvement Strategies . . 7
The DRP Approach: Changing the System 10

I. THE NINTH-GRADE SCHOOL-WITHIN-A-SCHOOL (SWAS) PROGRAM IN THE KANSAS CITY (MO) PUBLIC SCHOOLS 13
District Evaluation 19
Reading Comprehension Performance 21
Teacher Questionnaire 24
Summary 36

II. ELIZABETH BARRETT BROWNING INTERMEDIATE SCHOOL 115, BRONX, NEW YORK 42
Reading Comprehension Performance 44
Educational Improvement Programs at IS 115 46
Teacher Questionnaire 56
Dissemination and Utilization of Comprehension-Improvement Strategies 74
Summary 79

III. APOPKA SENIOR HIGH SCHOOL, ORANGE COUNTY (ORLANDO) 85
Reading Comprehension Performance 86
Educational Improvement Programs at Apopka 97
Teacher Questionnaire 111
Summary 128

IV. DISCUSSION AND CONCLUSIONS 136
Acquisition and Utilization of Comprehension-Improvement Strategies 136
Exemplification of Effective Schools Characteristics 141
National Urban Alliance Affiliation 147
Text References 149

APPENDIX A.1 Glossary of Comprehension-Improvement Strategies 150
APPENDIX A.2 Glossary References and Related Materials 154

FIGURES

Figure 1. February 1986 DRP Scores (Vertical Axis) Plotted Against November, 1989 DRP Scores (Horizontal Axis) for 1990 Seniors, N = 280 89

Figure 2. 1987 DRP Scores (Vertical Axis) Plotted Against November, 1989 DRP Scores (Horizontal Axis) for 1990 Juniors with Scores Below 57 in 1987, N = 66 92

Figure 3. November 1987 Scores (Vertical Axis) Plotted Against 1987 to 1989 DRP Gain Scores (Horizontal Axis) for 1990 Juniors with Scores below 57 in 1987 (N = 66) 94

TABLES

Table INT.1 Average DRP Scores for 1987-88 Norm Samples 6

Table INT.2 Average DRP Readability Values of Periodicals and of Documents Used in Entry-Level Positions in a Major Insurance Company 9

Table INT.3 Partial List of Comprehension-Improvement Strategies Emphasized in the Orange County (FL) Public Schools 11

Table I.1 Average DRP Scores for Ninth-Grade SWAS Units, 1984-85 and 1988-89 23

Table I.2 SWAS Teachers' Designation of Frequency of Use of Selected Comprehension-Improvement Strategies 25

Table I.3 SWAS Teachers' Designation of Effectiveness of Selected Comprehension-Improvement Strategies 28

Table I.4 SWAS Teachers' Designation of Frequency and Effectiveness of Aspects of Coordination 34

Table I.5 SWAS Teachers' Designation of Frequency of Use and Effectiveness of Cooperative Learning Techniques (N of Responses) 37

Table I.6 Teachers' Ratings of Considerations Contributing to Success of the SWAS Program (N of Responses) 39

Table II.1 Percentages of Students at IS 115 Above the DRP Fiftieth Percentile in 1987-88 and 1988-89, by Grade 45

Table II.2 IS 115 Faculty Designation of Frequency of Use of Selected Comprehension-Improvement Strategies 59

Table II.3 IS 115 Faculty Designation of Effectiveness of Selected Comprehension-Improvement Strategies 61

Table II.4 Strategies Designated by IS 115 Faculty in Response to the Question, "Please list the three comprehension development strategies that have worked best for you in the classroom" . . . 63

Table II.5 Relationships Between Reported Frequency of Use of Strategies and Perceived Value of Workshops 67

Table II.6 Relationships Between Reported Effectiveness of Use of Strategies and Perceived Value of Workshops at IS 115 69

Table II.7 Relationships Between Reported Frequency of Use of Strategies and Years of Teaching Experience at IS 115 71

Table II.8 Relationships Between Reported Effectiveness of Use of Strategies and Years of Teaching 73

Table III.1 Average DRP Scores for Apopka Students, February, 1986 to February 1987 Through November, 1988 to November, 1989 . . . 87

Table III.2 "Intervention" Strategies Listed in Introductory Interdisciplinary Workshop Materials, Fall 1988 105

Table III.3 Apopka High School Faculty Designation of Frequency of Use of Selected Comprehension-Improvement Strategies 112

Table III.4 Apopka High School Faculty Designation of Effectiveness of Selected Comprehension-Improvement Strategies 114

Table III.5 Relationship Between Reported Frequency of Use and Perceived Effectiveness of Use of Comprehension-Improvement Strategies 115

Table III.6 Variable Loadings for High/Low Frequency of Use Factor Among Respondents at Apopka High School 118

Table III.7 Perceived Effectiveness of Comprehension-Improvement Strategies Reported by Language Art/Reading/English Teachers and Other Teachers 121

Table III.8 Effectiveness Designation of Apopka Teachers, Other than Language Arts/Reading/English Teachers, Who Reported Using a Given Strategy "Very Often" and "Often" 122

Table IV.1 Faculty Designations of Frequency of Use and Effectiveness of Comprehension-Improvement Strategies, by Location 138

Some of the educators cited in the text can be reached at the following addresses and telephone numbers.

Joyce Clark
Reading Resource Teacher
515 Martin Street
Apopka High School
Apopka, Florida 32712
(407) 889-4194 X227

Ira Goldberg
Principal
IS 115
120 E. 184th Street
Bronx, New York 10468
(212) 220-8458

Fay Gooden
Kansas City School District
SWAS Program, Faxon School
3710 Paseo
Kansas City, Missouri 64109
(816) 968-4739

Stephen Ivens
Touchstone Applied Science Associates
Fields Lane P.O. Box 382
Brewster, New York 10509
(914) 277-4900

Joy Monahan
Program Coordinator, Secondary Reading
Orange County Public Schools
P.O. Box 271
434 N. Tampa Avenue
Orlando, Florida 32802
(407) 422-3200 X437

INTRODUCTION

This study is concerned with the implementation and impact of instructional strategies to improve students' comprehension skills at three diverse secondary-school locations: the ninth-grade School-within-a-school program for previously low-achieving students at senior high schools in the Kansas City (MO) School District (Chapter I), Intermediate School 115 (IS 115) in an inner-city neighborhood in the Bronx borough of New York City (Chapter II), and Apopka High School in the Orange County Public Schools in the Orlando (FL) Metropolitan Area (Chapter III).

All three locations were selected because data were available indicating that their students had been making impressive progress with respect to performance on a functional measure of reading comprehension-the Degrees of Reading Power (DRP) test developed by Touchstone Applied Science Associates in cooperation with the College Board and New York State Education Department. In addition, educators at all three locations were implementing local variations of a school-improvement approach based on use of the DRP which can help teachers acquire and use comprehension-improvement strategies in the classroom. While our descriptions of recent and current developments at the three locations included in the study will identify other activities and characteristics which help account for their success in improving students' comprehension, the DRP approach has provided a central unifying framework for enhancing school effectiveness at each location.

The DRP approach in its broadest outlines is based on a three-step set of components which have been briefly summarized (Koslin, Koslin, Zeno, and Ivens, 1989:1) as follows:

1. Administer the DRP in order to "measure students' ability to comprehend English prose".

2. Analyze the difficulty-level (i.e., "readability") of instructional materials.

3. Provide instructional materials and support services to help teachers acquire and use instructional strategies for improving students' comprehension.

The DRP Test

Developers of the Degrees of Reading Power test have described it as measuring "what might be called minimally inferential comprehension-a necessary though not sufficient, prerequisite to other higher order cognitive abilities. In other words, [the] Primary and Standard DRP test are single-objective tests measuring how well students understand the surface meaning of what they read" (Koslin, Zeno, and Koslin, 1989:1). The teachers' manual for the DRP cites the following characteristics as constituting "properties which distinguish" the DRP from other tests:

> 1. DRP test items are designed so that the paragraph or passage in which they are embedded must be read and understood in order for the student to answer correctly....when the meaning of the paragraph is taken into account, only one response is plausible.
> 2. All of the content information that is needed to select the correct response is contained within the DRP paragraph or passage. No prior familiarity with the subject matter is required to answer the embedded items correctly....
> 3. Regardless of the difficulty of the prose paragraph or passage, all response options are common words....[thus] failure to respond correctly...can be attributed unambiguously to a failure to comprehend the text in which they appear.
> 4. DRP paragraphs and passages are designed to reduce the likelihood that guessing strategies, associative processes, and other nonreading activities can be used to respond to items correctly....
> 5. Item difficulty is linked to text difficulty. The student should be able to respond correctly to most of the items in the text up to the point at which the student cannot understand...well enough to decide which word is correct (Koslin, Zeno, and Koslin, 1989:4).

Developers of the DRP also have cited (Ivens and Koslin, 1989:4) additional "important features of the Primary and Standard DRP tests" as follows: 1) "they are untimed; 2) the paragraphs and passages form a linearly ordered scale, i.e., all paragraphs and passages, from the easiest to the hardest, measure the same construct of reading; 3) the results can be interpreted in terms of what students can read; and 4) the tests are particularly sensitive to the assessment of growth in reading across grades". Furthermore, there is "no evidence that teachers can circumvent successfully the instructional process by teaching to the format" of the DRP (Ivens and Koslin, 1989:9).

It should be noted that personnel at Touchstone Applied Science Associates recently have developed an advanced version of the DRP which "extends the definition of comprehension" beyond inferential responses toward higher-order aspects of comprehension. A recent description states that the "questions in the Advanced DRP test assess the ability to choose that integration of propositions which is valid within a paragraph, between adjacent paragraphs, and between two or more non-adjacent paragraphs.... The questions can be considered 'higher order' because the correct answer depends upon the student being able to recognize which response option is properly derived from the text (Ivens and Koslin, 1989:8-9).

Students' scores on the DRP are reported on a scale ranging from 15 units to 99 units. Converted from raw scores, the scale units represent the readability of materials for which a student registers a particular probability of success. For example, a student with a raw score of 41 on Test Form E-9 receives a mid-instructional level scale score of 70 indicating that he or she can process prose at this level of difficulty/ readability (see below) with a "probability of success" of 75 percent.

Similarly, this student receives an "independent level" comprehension score of 59 indicating that he or she comprehends material at this readability level with a ninety percent probability of success (Koslin, Zeno, and Koslin, 1989:17-18).

Scale scores indicating current comprehension levels and changes in comprehension levels for a student or group of students most often are reported in terms of the mid-instructional level at which prose is being comprehended with a 75 percent probability of success. All DRP scores reported in subsequent sections of this report are for the mid-instructional level. As shown in Table INT.1., norms are available indicating the average scores obtained at a given grade level by samples of students in DRP norming studies in 1987 and 1988. As indicated in the table, Spring scores for the "average" student (at the norm mean) range from 42 at the end of the third grade to 75 at the end of the twelfth grade. Spring scores for the student at the 25th percentile range from 33 at the end of the third grade to 62 for high school seniors.

DRP Matching of Students and Texts

As mentioned above, students' DRP scores are reported in scale units which can be aligned with readability/difficulty scores for prose materials identified as being at a level of difficulty at which a given student will have a fifty percent probability (frustration level), a 75 percent probability (instructional level), or a ninety percent probability of success (independent level). (Eighty and seventy percent probability-of-success levels also are specified in DRP norming tables.) Text categorization according to these student comprehension levels has been summarized briefly by educators in the Orange County (FL) Public Schools as follows:

Frustration Level: student's ability to comprehend the text is improbable.

Instructional Level: student can understand the text with good instructional assistance in the classroom.

Independent Level: student can read the text without help.

Readability information for a particular passage or set of text passages is obtained using a formula that produces readability values generally ranging from the low thirties to the high eighties. Levels of difficulty using DRP readability values for materials typically encountered in selected real-world situations are shown in Table INT.2. This DRP measure of text difficulty is derived from the Bormuth Mean Cloze Readability Formula which is based on the length of words, the length and complexity of sentences, and the proportion of commonly used words. The DRP readability formula is available as a computer program (i.e. the MicRA→ DRP formula) which can be installed on microcomputers and uses an "abbreviated set of coding rules" that makes it relatively easy to obtain a readability estimate (i.e., value) for a passage or set of passages teachers may want to utilize in instruction (Kozlin, Zeno, and Kozlin, 1989:21). In addition, the College Board and Touchstone Associates have calculated and distributed DRP values for thousands of textbooks and trade books that are used frequently in U.S. schools. Since teachers then have information denoting students' comprehension scores and text readability values that are measured in the same functional metric, they can proceed to improve the match between students' current comprehension capacity and the materials assigned for instruction.

The philosophy underlying matching of students' comprehension levels and text materials has been described at some length in materials published by the College Board and Touchstone Associates. According to a recent DRP

Table INT.1

Average DRP Scores for 1987-88 Norm Samples*

Grade	Mean		25th Percentile	
	Fall	Spring	Fall	Spring
3	36	42	27	33
4	45	48	38	40
5	50	54	42	46
6	57	60	49	52
7	61	63	52	54
8	65	68	55	57
9	68	69	57	59
10	70	71	59	61
11	72	74	61	62
12	74	75	62	62

* Scores shown are mid-instructional level scores reported for 1987-88 norm samples.

Source: Degrees of Reading Power Norms. Brewster, NY: Touchstone Applied Science Associates. Brewster, NY: TASA™ , Inc., 1988, p.7.

publication (Koslin, Zeno, and Koslin, 1989:29-32), the

> ...structuring of what might be termed a productive learning situation depends upon many factors, not the least of which are the aims of instruction and the difficulty of the task. When the purpose of instruction is to learn from reading, or whenever teachers assume that students understand the surface meaning of the text, the material should be well within a student's ability.... However, when the purpose of instruction is learning to read, reading specialists believe that very easy prose assignments do not provide a sufficiently challenging learning task....
>
> In order to increase student ability to comprehend the surface messages in text...the materials assigned should be sufficiently difficult to require that the student expends efforts to comprehend them. At the same time, the materials must be easy enough to ensure that the student will experience success....The balance between 'challenge' and probable success is thought to be provided by materials that are beyond, but not too far beyond, the student's current comprehension ability....when materials of such relative difficulty are used, the middle-grade student both understands enough of the prose to learn from a teacher's direct instruction and has the metacognitive ability of knowing when comprehension has been achieved. However...if the difficulty of the materials greatly exceeds the ability required of the student, then instruction will flounder.*
>
> ...[because] DRP tests ask no product questions which assume that the surface meaning of text is understood, they differ from most reading inventories and conventional norm-referenced tests. Consequently, it is necessary to stress that whenever the purpose for reading is to respond to higher-order, product questions, high probabilities of success...may be required. Since the difficulty of higher order product questions generally increases in high school and beyond, a probability of success around P = .90 may be required.

Teachers' Utilization of Comprehension-Improvement Strategies

The most extensive and far-reaching component in the DRP approach involves the introduction and dissemination throughout a school of instructional strategies to improve students' comprehension of textbooks and other prose materials used in the classroom, homework, libraries, media

*The authors also emphasize the point that "while challenge is an important variable in planning lessons, variables such as the amount of help teachers will provide, student interest and student need for success also should be considered" in decisionmaking. In addition, the authors caution that users should "avoid selecting a single level of comprehension...to effect THE mechanical match of materials with student ability for any instructional purpose".

centers, and other educational locations and assignments. Since virtually all teachers use prose materials selected to facilitate learning of the subject being taught, the effectiveness of instruction in nearly all classrooms depends in part on students' capacity to comprehend these materials. From this point of view, every teacher is or ought to be a teacher of comprehension in his or her subject field. Utilization of instructional strategies to help students understand what they are being asked or required to read thus is an important part of each teachers' job.

Numerous instructional strategies have been developed to enhance students' capacity to comprehend materials used in the classroom and elsewhere.* A wide variety of such strategies which are used at the schools included in this study are described briefly in Appendix A to this report. Widespread development during the past two decades of comprehension-improvement strategies and of understanding on how to use them effectively in the classroom and throughout the school has constituted what amounts to a "revolution" in educators' capacity to enhance the comprehension abilities and performance of their students (Pearson, 1985). Many of the strategies emphasized in the Orange County (FL) Public Schools are listed in Table INT.3. An overview that delineates some of the general strategies and approaches that can improve students' comprehension has been prepared by Thomas and Julie Estes (1989) of the University of Virginia, Charlottesville and the Virginia State Department of Education, respectively. After noting that productive instructional decisionmaking can begin with matching of students and materials using the DRP technology described above, these authors recommend the following kinds of strategies

*
Harris and Cooper, 1985.

Table INT.2

Average DRP Readability Values of Periodicals and of Documents Used in Entry-Level Positions in a Major Insurance Company

Type of Periodical	DRP Value
Professional journals	72-77
Adult general interest	62-71
Teen magazines	58-64
Children's magazines	48-57

Entry-Level Positions	DRP Value
Claims examiner	71
Administrative Assistant	70
Pension Technician	69
Mail Service coordinator	68
Premium Acceptance Clerk	64
Secretary - typist	63

Source: Lois E. Burrill, "How Well Should a High School Graduate Read?", NASSP Bulletin 71(497):61-72.

for "appropriate" delivery of instruction emphasizing developement of students' comprehension (Estes and Estes, 1989:12):

> Help students access prior knowledge of a topic before they read about it. Discuss with students what they know about the topic. Survey reading materials with students before assigning reading-look at pictures, other graphics, headings and subheadings. Elicit from students what they hope and what they expect the author will tell them about the topic....
>
> Discuss with readers how they understand what they read, focusing on the interplay of the words and the meaning of text....
>
> Foster concept development by helping students construct semantic maps and feature-analysis charts....
>
> Help readers explore synonyms for words, using tools of word study such as a thesaurus and various popular dictionaries of synonyms and word origins. Help students become vocabulary sleuths, constantly searching for clues to the meaning of words....
>
> Ask readers to make substitutions in text and to consider various ways to express the same thing in what they read and what they write, exploring the relationships of words and context....
>
> Have students write summaries or paraphrases of sections of text, using their own words....
>
> Examine and discuss elements of effective style in text by discussing why authors say what they say in the way they say it.

The DRP Approach: Changing the System

As indicated above, the DRP approach provides a technology that allows teachers to assess students' functional comprehension levels and obtain a more productive match between students' comprehension levels and instructional materials. In accordance with the emphasis placed on improving students' comprehension of materials that teachers use or assign to teach their subjects, the central instructional focus throughout a participating school is on introducing and utilizing learning strategies that can help enhance student performance with respect to comprehension.

Table INT 3.

Partial List of Comprehension-Improvement Strategies Emphasized in the Orange County (FL) Public Schools*

Prereading

1. Frayer Model
2. Graphic Organizers
3. List-Group-Label
4. Possible Sentences
5. Semantic Feature Analysis
6. Semantic Mapping
7. Anticipation Guide
8. Directed Reading-Thinking Activity
9. Prediction
10. SQ3R (Study/Questions/Read/Review/Recite)
11. Think Aloud

Study Skills

1. Graphic Organizers
   a. Cause/effect
   b. Comparison/contrast
   c. Time order
   d. Simple listing
   e. Problem/solution
   f. Bulletin board
   g. Chalkboard diagram, etc.
2. Cornell Notetaking
3. One-Sentence Summary
4. Pyramid Diagram
5. Story/Chapter Mapping
6. Framed Paragraphs

Comprehension

1. Anticipation Guide
2. Directed Reading-Thinking Activity
3. Guided Reading Procedure (GRP)
4. Prediction
5. Questions/Answer/Relationships (QAR)
6. Reciprocal Teaching
7. ReQuest
8. SQ3R (Study/Question/Read/Review/Recite)
9. Think Aloud

Vocabulary

1. Analogies
2. Cloze Procedure
3. Frayer Model
4. Graphic Organizers
5. List-Group-Label
6. Possible Sentences
7. Semantic Feature Analysis
8. Semantic Mapping

* Some other OCPS publications refer to comprehension-improvement strategies as "Content Area Reading-Learning-Thinking" Strategies and "Content Area Reading Learning" strategies.
A glossary describing each strategy is provided in Appendix A.

Initiating the DRP approach represents, in effect, a decision to fundamentally change instructional patterns at participating schools. In any enterprise, decisions may have to be made about future courses of action when outcomes fall far short of expectations. The decision most often followed is to attempt to fine-tune the system through minor adjustments and tinkering. The rationale for the DRP approach recognizes that minor adjustments and tinkering have not worked because such responses ignore the underlying factors which are disrupting the system and causing serious problems.

Specifically, the central problem in many schools is that a high proportion of students lack the skills to comprehend textual materials in the content areas. The DRP approach response to this problem is to focus instruction on the comprehension of textual materials rather than on the presentation of subject matter per se. Whereas teachers traditionally present, assign, and test subject matter but infrequently concern themselves with how students process instructional materials, the DRP approach focuses on process (Sherk, n.d.). By providing teachers with the capacity to assess students' comprehension, match materials with students' comprehension levels, and introduce instructional strategies for improving students' comprehension, the DRP approach attempts to confront and solve rather than make minor adjustments in response to a central underlying problem in the school. Ways in which educators at three locations have tried with some success to change instructional and organizational patterns in order to address problems involving inadequate comprehension among their students are described in the following three chapters.

I. THE NINTH-GRADE SCHOOL-WITHIN-A-SCHOOL (SWAS) PROGRAM IN THE KANSAS CITY (MO) PUBLIC SCHOOLS

The Kansas City (MO) Public School District's ninth-grade School-within-a-School (SWAS) program began during the 1983-84 school year when a SWAS unit was established at each of five participating senior high schools. The program expanded to two additional high schools in 1985-86, and to eight in 1986-87, thus including every senior high in the district except its "college-prep" magnet school. Seven schools participated in 1988-89, and eight have SWAS units in 1989-90. The average annual enrollment per SWAS unit between 1985 and 1989 was 52 students.

Organization and Operation of SWAS Units

Designed for students with reading scores significantly below grade-level, the SWAS program usually assigns forty to one hundred students at each participating school to receive academic instruction from four or five teachers in English/language arts, math, reading, social studies, and, in some cases, science. A teacher-coordinator serving at least half-time is also appointed at each site. In addition, since 1985 a full-time Resource Teacher (Fay Gooden) has been available to provide leadership in developing and implementing the SWAS program at participating schools.

Placement in SWAS is based on academic achievement scores, teacher, counselor, and administrator judgement, attendance records, and other considerations, with particular attention given to functional comprehension scores on the Degrees of Reading Power test. Most participants have reading scores below the eighth-grade level. Students who are virtual nonreaders or who are severely disruptive generally are not assigned to SWAS because they require even stronger interventions. Selection criteria are not viewed as constituting strictly homogeneous grouping or tracking; rather, they are

viewed as a means of levelling to identify a range of students who can benefit from a year of intense special assistance in relatively small class settings, and who can then participate in regular school programming.

Teachers selected for SWAS must be willing and able to work successfully with at-risk students. Teachers are provided with training and other forms of assistance to implement the following program components and goals:

- Content-area materials below students' frustration levels for independent work and slightly above their instructional level for classroom instruction are utilized, along with the Degrees of Reading Power test and approaches developed by The College Board for matching students and materials.
- Instructional methods emphasize comprehension-improvement strategies such as those described by Harris and Cooper (1985).
- Teachers are assigned common planning periods intended, in part, to improve the coordination of instruction, particularly with regard to (1) providing reinforcement of curriculum and instruction across classes and (2) working out team agreements regarding selection and use of texts, student grading policies and practices, communications with parents, and other matters.
- Highly motivating experiences for students, such as academic competitions between teams and schools, visits to colleges, conferences with local community leaders, and attendance at cultural events, are provided.
- Data such as Degrees of Reading Power scores are collected regularly to provide ongoing assessment of student progress and of instructional improvement efforts in the program.

- Intensive staff development, including summer training, after-school and Saturday sessions, and seminars during the regular school day, is provided; summer staff development has been valuable particularly in providing teachers with time and technical assistance to coordinate curriculum and instruction across subject areas and to share ideas and materials across schools.
- Implementation plans and strategies have been developed to facilitate productive agreements and collaboration at all levels of the school district, including SWAS teaching teams, the larger faculties within which they function, key central-office administrators, and members of the board of education.

Philosophical Premises. As developed and stated by SWAS Coordinator Fay Gooden in a program description prepared in 1985, major premises underlying operation of the SWAS program include the following:

1. Students who have deficiencies now will fall further behind and will experience serious difficulty in achieving success in the adult world unless there is positive intervention.
2. A prerequisite to academic achievement is the development of a healthy self-image.
3. A program which includes the dual approach of improving academic skills emphasizing comprehension, cognition, and guiding students towards developing a positive image of self/relationship to others should eliminate some skill deficiencies and simultaneously assist the students in developing the self confidence necessary to pursue school goals with greater vigor and with a greater probability of success (Gooden, 1985, p. 2).

Teacher Qualifications. As mentioned above, SWAS teachers are to be selected by their principals based on their potential for success in working effectively with previously low-achieving students. Gooden (1985) described the desired "qualifications" for SWAS teachers under three major headings as follows:

Personal

A teacher must be:

1. a caring person.
2. one who is not threatened by sharing.
3. one who believes in the worth and dignity of all people.
4. one who is tolerant of people who are different from himself or herself.
5. one who channels energy toward serving and helping others.
6. one who models good teaching behavior.
7. one who believes he or she can make a difference.

Professional

A teachers must be one who:

1. demonstrates readiness to become committed to a School-Within-A-School approach to instructional improvement.
2. has knowledge of or willingness to learn how to teach reading comprehension effectively.
3. is creative and demonstrates an ability to develop teaching-learning strategies that result in student success.
4. demonstrates a willingness to continue to obtain knowledge of research on 'effective schools'.
5. is willing to acquire knowledge of student learning styles.
6. practices different teaching methods to produce positive student outcomes.

Teaming Responsibilities

The member must:

1. be willing to work cooperatively with others (i.e. -- planning, linking).
2. conduct counseling sessions with students in order to enhance student self-concept development and interpersonal relationships.
3. assist in designing and implementing assertive discipline plans.
4. assist in establishing and maintaining team cohesiveness. ("Team cohesiveness begins with you".)
5. practice 'effective teaching techniques' directed toward enhancing thinking and comprehension.
6. assist in selecting and utilizing appropriate reading materials designed to enhance comprehension and cognition.
7. attend in-service and staff development sessions for program success.
8. establish and maintain positive home and community relationships (Gooden, 1985, p. 7).

Coordinator Responsibilities. The program description (Gooden, 1985) describes the major responsibilities of the school-level coordinator as follows:

1. Conducts team meetings.

2. Assists teachers in linking techniques, linking curriculum, and linking learning.
3. Counsels students.
4. Arranges and participates in inservice training/staff development for program services.
5. Models good teacher behavior.
6. Works cooperatively with the team.
7. Assists in planning and implementing program design.
8. Conducts ongoing program assessment and evaluation (Gooden, 1985, p. 8).

Linking Learning Across Subjects. As mentioned above, one of the central components in the SWAS approach is to coordinate curriculum and instruction across subject areas in order to reinforce vocabulary, concepts, and other aspects of learning for participating students, who previously have experienced relatively little success in school. Referred to in the program description as "Linking Learning", this component also is intended to facilitate coordination of efforts of teachers on each SWAS team and to help students acquire appropriate "schema for thinking and comprehending" (Gooden, 1985, p. 10). One indication of the stress placed on this component and its importance in implementing the SWAS program is evident in the fact that nearly all teachers on SWAS teams functioning in 1984-85 participated in a three-week (all-day) summer workshop at which approximately two weeks were devoted to development of school-level policies, classroom lessons, and specific week-by-week plans for coordinating instruction during the school year across English, reading, mathematics, social studies.

Student Selection. As mentioned above, the SWAS program is intended to provide help for students who have been low achievers but who are not so far behind academically or so alienated from school that they probably would not benefit from participation and might make effective implementation almost impossible. Accordingly, criteria for placement in ninth-grade units have included: 1) ITBS reading or math scores two years

or more below grade level at the beginning of the ninth grade; 2) Degrees of Reading Power scores between 30 and 55; and 3) teacher, administrator, and counselor judgment and discretion in interpreting these criteria to facilitate defensible selection and rejection of candidates for placement.

Utilization of Comprehension-Improvement Strategies. Stress in SWAS has been placed on instructional strategies for improving students' comprehension since the second year of the program in 1984-85. During the first year SWAS staff had worked very hard to coordinate teaching across classrooms, refine student selection criteria, motivate students, and implement other aspects of the program's philosophy as described above. However, data collected at the end of the 1983-84 academic year indicated that although student attendance and motivation apparently improved markedly, virtually no gains were registered in academic performance (Levine and Campbell, 1984). After a one-or two-month period during which staff attempted to recover from this debilitating outcome, decisions were made to concentrate more systematically and meaningfully on instructional-improvement aspects in subsequent years.

Accordingly, the DRP approach was emphasized in 1984-1985 and has been a basic focus for continuing staff development in SWAS since that time. Staff have concentrated on assessing students' comprehension levels, improving the match between students' comprehension scores and instructional materials, and acquiring strategies for improving comprehension. Each year, strategies for classroom emphasis are selected by the SWAS Resource Teacher and building-level coordinators; opportunities then are provided for demonstration, modelling, coaching, and practice in the classroom. Resource Teacher Gooden reports that over the years a wide range of strategies have been introduced for use in pre-reading, reading, and post-reading prases of

instruction. In addition, various approaches to cooperative learning also have been stressed and now serve as an overall "organizing framework" in which to utilize comprehension-improvement strategies at all stages of the instructional sequence.* Use of comprehenison-improvement strategies and the framework in which they are embedded are discussed further in subsequent sections of this report dealing with the questionnaire we administered to SWAS teachers.

District Evaluation

Evaluation reports prepared by the Evaluation Office of the School District of Kansas City, Missouri Department of Research, Evaluation, and Testing generally have provided encouraging information regarding the effectiveness of the ninth-grade SWAS program. For example, the last full evaluation (Gassman, 1988) published in August, 1988 reported that average attendance in 1987-88 was 88 percent-five percentage points higher than districtwide ninth-grade attendance. In addition, data collected by the SWAS Resource Teacher indicated that the average gain in students' reading comprehension on the Degrees of Reading Power (DRP) Test was approximately ten points, and evaluators found that 484 of 491 students enrolled in ninth-grade units in 1985-86 were still in the district's high schools in 1987-88. The executive Summary of the 1988 evaluation report also included the following information:

> The data indicate an increase in the efficient use of classroom time. Instructional activity time versus managerial time increased and more of an emphasis on curricular components was observed. Both at the junior and senior high level, comprehension and cognitive development increased. A major goal of the program was to improve the comprehension and higher order thinking skills of

*Interview with Fay Gooden, January 12, 1990

the SWAS students. From the observational data it would appear the teachers were implementing these components.*

The perceptions of those associated with the program indicated the program was accomplishing its goals. Generally, the teachers in the program responded positively to questionnaire items concerning the program (Gassman, 1988, p. iv).**

*This conclusion was based on classroom observations in which evaluators coded the presence or absence of emphasis on comprehension-related activities and summarized the percentages of observations in which such activities were present from 1985-86 to 1987-88 as follows:

	1985-86	1986-87	1987-88
Comprehension Skills	87	79	92
Oral Expression	15	52	72
Written Expression	23	50	58
Higher Order Thinking Skills	37	55	64

**This conclusion was based on data from questionnaires on which the percentages of SWAS teachers who agreed with questionnaire statements were as follows:

	1986-87	1987-88
1. Satisfied with the program	93	89
2. Satisfied with student selection process	67	53
3. Satisfied with site administrative support	90	64
4. Feel SWAS is an asset to the school	100	89
5. Feel students enjoy being in the SWAS program	65	94
6. Feel SWAS in-service sessions have been helpful	90	83
7. Regularly use SWAS instructional strategies	87	86
8. Have appropriate instructional materials	58	61
9. Have sufficient planning time for SWAS classes	61	44
10. Feel the SWAS resource teachers have been helpful	90	97

Reading Comprehension Performance

As mentioned above, virtually no gains in reading comprehension scores on the DRP test were registered at the conclusion of the first year of the SWAS program in 1984, but comprehension-improvement strategies received more emphasis beginning the second year. Data collected by Resource Teacher Fay Gooden have indicated that between 1984-85 and 1987-88 the average gain for students present for pre-and post-testing (i.e. early fall and mid-spring, respectively) has been eight-to-eleven points. For example, as shown in Table I.1, the average gain across SWAS units in 1984-85 was nearly nine points.

However, data shown in Table I.1 for 1988-89 indicate that the average gain was only 4.7 DRP points, considerably less than in preceding years. Resource Teacher Gooden and school-level SWAS coordinators believe that one of the major reasons for this decline is that spring, 1989 post-testing for the first time used the PA2 version of the DRP, and that many SWAS students reacted with frustration to this more difficult-to-comprehend version. (Previous testing used the PA4 version.) Gooden received several calls from coordinators expressing this perception very soon after the 1989 test was administered, long before data were available indicating that gain scores were less than they had been in previous years. The validity of this explanation can be assessed to some extent by using the PA2 and PA4 versions of the DRP to sample SWAS students' performance in future years.

Considered in terms of overall student performance across six years, DRP gains for ninth-grade SWAS students have been generally encouraging. It appears that average gains have been about nine or ten points most years since 1984, even though most students begin with relatively low comprehension scores and many if not most have not gained at the national

rate in preceding years. Regression to the mean probably accounts for some of the gain in DRP scores, but we do not believe it is a major consideration inasmuch as the DRP is not the only selection criterion in most units and SWAS students generally have performed relatively poorly on other pre-entry reading tests.

As is typical of programs focussing on low-achieving students in big city districts, SWAS enrollment fluctuates a good deal during the school year as students move from one school to another. In addition, some students enter SWAS well after the academic year has begun, and others are transferred for one reason or another into regular classes. These mobility patterns raise the possibility that students who do not have pre- and post-DRP scores during a given year may be gaining much less on the average than those who have both scores. However, "spot" analysis we have carried out intermittently over the past six years has indicated that the pre-and post-scores of students with only one score differ very little from those of students with both scores. In addition, many of the students who enter SWAS late or leave early are not present long enough for the program to have a substantial impact on their comprehension performance. Thus we conclude that SWAS has been having a positive impact on the comprehension performance of the high-risk population it is designed to serve. On the other hand, implementation should be carefully monitored in the future to ensure that 1988-89 scores do not represent a decline in program effectiveness and that SWAS will be successful with an even higher proportion of students in the future.

Table I.1

Average DRP Scores for Ninth-Grade SWAS Units, 1984-85 and 1988-89

School	1984-85 Sept. 1984	1984-85 May 1985	1984-85 Diff	1984-85 N	1988-89 Sept. 1988	1988-89 May 1989	1988-89 Diff	1988-89 N
Central	50.0	60.9	10.9	37	51.0	56.1	5.1	25
East	NP *				50.4	54.1	3.7	39
Northeast	46.6	57.0	10.4	52	56.0	60.7	4.7	37
Paseo	47.8	55.3	7.5	74	56.6	58.1	1.5	33
Southeast	NP *				50.3	57.9	7.6	25
Southwest	46.4	53.0	6.6	40	NP *			
Van Horn	NP *				54.0	58.2	4.2	25
Westport	45.7	54.5	8.8	61	57.4	64.1	6.7	36
Total	47.1	55.9	8.8	264	53.9	58.6	4.7	220

* NP = No program

Teacher Questionnaire

In late spring of the 1988-89 academic year we prepared and distributed an anonymous questionnaire designed to assess SWAS teachers' reactions to comprehension-improvement strategies emphasized in staff development provided through the office of the SWAS Resource Teacher and other sources during the preceding five years. Unfortunately, despite repeated efforts we were able to obtain usable responses from only fifteen of the approximately thirty teachers who served as SWAS faculty in 1988-89. Among those fifteen, four are math teachers, four teach social studies, three are English teachers, two teach reading and two teach science. Due to the relatively low number and percentage of completed questionnaires, we were not able to carry out analysis as extensive as that we report in subsequent sections of this report on Intermediate School 115 in the Bronx, New York and Apopka High School in Orange County, Florida.

One of the sections on the questionnaire asked respondents to designate how frequently they used thirteen comprehension-improvement strategies that had been emphasized in staff development. (Strategies selected for inclusion were designated by the SWAS Resource Teacher and several other persons familiar with the program.) As shown in Table I.2, strategies designated as used most frequently included Prediction, Writing/ Summarizing, Structured Overview, DRA, Concept Mapping, Anticipation Guides, and PREP (Pre-reading Plan), all of which had mean scores lower than the "sometimes" category (i.e. used more frequent than "sometimes") and modal responses in the "very often" or "often" categories.* Conversely, ReQuest and Three-Level Guides had modal scores in the "hardly ever" or the "never"

*A glossary of comprehension-improvement strategies is provided in Appendix A.

Table I.2

SWAS Teachers' Designation of Frequency of Use of Selected Comprehension-Improvement Strategies*

	Frequency of Use (N of Responses)					
Strategy**	Very Often	Often	Sometimes	Hardly Ever	Never	Mean ***
DRA	0	8	6	1	0	2.5
SQ3R	0	2	10	0	1	3.0
CONCEPT MAPPING	6	6	3	2	1	2.5
PREDICTION	6	5	4	0	0	1.9
WRITING/SUMMARIZING	2	9	3	1	0	2.2
STORY MAP	0	4	5	2	3	3.3
STRUCTURED OVERVIEW	2	7	3	1	1	2.4
QUESTIONS ONLY	0	4	2	5	1	3.3
REQUEST	1	0	4	8	2	3.9
PREP (Pre-reading Plan)	4	2	3	3	3	2.9
KWL (Know/Write/Learn)	0	3	6	1	2	3.2
THREE-LEVEL GUIDES	0	0	4	3	7	4.2
ANTICIPATION GUIDES	1	6	5	1	1	2.6

* Fifteen teachers returned usable questionnaires, but some did not respond to every item.

** A glossary describing each strategy is provided in Appendix A.

*** Very often = 1; never = 5.

categories. The overall (unweighted) mean for the strategies was 2.9, almost exactly at the "sometimes" designation. It is clear that teachers in the sample as a whole report at least periodic use of more than half of the strategies.

As regards perceived effectiveness of the comprehension-improvement strategies they had used, respondents were asked to designate effectiveness on a four-point continuum ranging from "very" to "hardly any". "Very" effective was scored as one, "hardly any" effectiveness as four. Respondents who had not used strategies frequently and therefore might not feel competent to assess effectiveness could select "not applicable", or might not respond at all despite our request to answer every item. Respondents appeared to have generally availed themselves of these opportunities to avoid assessing strategies they used infrequently or not at all: the five strategies with the highest mean scores in Table 1.2 were among the six with the highest combined totals for "not applicable" and no response. The average effectiveness for the thirteen strategies was 2.0 - exactly at the "some" effectiveness point on the four-point scale.

As shown in Table I.3, the strategies which respondents designated as most effective were Prediction, DRA, Concept Mapping, Structured Overview, PREP (Pre-reading Plan), and Writing/Summarizing. All six of these strategies were among the seven cited as being used most frequently in Table I.2. The seventh strategy (Anticipation Guides) in the most frequently used group was tied for seventh in the effectiveness rankings. The two strategies (ReQuest and Three-Level Guides) designated as least effective were the two cited as least frequently used. In general, respondents as a group reported that the comprehension-improvement strategies had at least "some" effectiveness: for all strategies except

Questions Only, ReQuest, and Three-Level Guides, more teachers who responded selected the "very" or "some" categories than selected the "little" or "hardly any" categories.

The results reported above indicate that respondents tended to rate the strategies they used most frequently as most effective, and vice versa. This conclusion was further supported by statistical analysis indicating that the correlation between the mean scores shown in Tables I.2 and I.3 was .87 ($p = .001$).

Of course, it is not a suprise to find that teachers who report that a strategy is effective also report using it relatively frequently or, conversely, that those who do not often use it report that it is not particularly effective. Correlational relationships of this kind cannot support definitive conclusions regarding the direction of causation, i.e., whether teachers use a strategy frequently because they find it effective or do not designate it as effective because they seldom us it. It is possible and perhaps even likely that both these tendencies are present simultaneously in the underlying perceptions and patterns that produced the data.

Instructional Coordination. Because coordination of instruction across classrooms has been an important activity in planning and implementing the SWAS program, we asked respondents, "To what extent have you been able to coordinate introduction of vocabulary, use of comprehension strategies, or similar aspects of your day-to-day instruction with instruction in other SWAS classrooms?" Among the fourteen teachers who responded, three designated the response category "nearly all the time", two selected "most of the time", seven selected "some of the time", and three designated

Table I.3

SWAS Teachers' Designation of Effectiveness of Selected Comprehension-Improvement Strategies*

	Perceived Effectiveness (N of Responses)					
Strategy**	Very	Some	Little	Hardly Any	Not Applicable	Mean ***
DRA	6	7	0	1	1	1.7
SQ3R	1	10	1	0	2	2.0
CONCEPT MAPPING	7	3	3	0	2	1.7
PREDICTION	9	5	0	0	1	1.4
WRITING/SUMMARIZING	6	6	3	0	0	1.8
STORY MAP	3	5	1	1	4	2.0
STRUCTURED OVERVIEW	5	6	1	0	2	1.7
QUESTIONS ONLY	0	5	3	2	2	2.7
REQUEST	0	2	5	2	4	3.0
PREP (Pre-reading Plan)	4	4	1	0	4	1.7
KWL (Know/Write/Learn)	2	4	4	0	3	2.2
THREE-LEVEL GUIDES	0	2	3	0	8	2.6
ANTICIPATION GUIDES	3	6	3	0	2	2.0

* Fifteen teachers returned usable questionnaires, but some did not respond to every item.

** A glossary describing each strategy is provided in Appendix A.

*** Very = 1; hardly any = 4.

either "once in a while" or "hardly at all". Thus the large majority indicated that they have been able to coordinate instruction with other SWAS teachers at least some of the time. In a subsequent part of the questionnaire described below, a large majority of the respondents indicated that this type of coordination had been an important consideration contributing to the success of the SWAS program.

Use of DRP Scores. The questionnaire administered to SWAS teachers included several items bearing on use of the DRP. First, respondents were asked, "How frequently have you been able to make use of students' DRP scores in planning instruction?" In response, nine teachers said they had been able to use DRP scores "very often" or "often", three selected the response category "occasionally", and three selected "hardly ever". Thus eighty percent said they had been able to use DRP scores at least occasionally in planning instruction.

Next, respondents were asked, "To what extent have you been able to match materials with DRP scores?" In response, five said "very much", seven selected the response category "somewhat", and three selected "not very much". Thus eighty percent said they had been able to match materials with students' DRP scores at least somewhat. Among the twelve teachers who responded they had been very or somewhat successful in working to match materials with students' DRP scores, six indicated that matching had helped improve learning "very much", and five indicated that matching had been "somewhat" helpful.*

We also should note that the responses indicating relatively less usage and perceived value in using DRP scores were disproportionately

*The item on this part of the questionnaire stated, "When (if) you have been able to match materials and students' DRP scores, how much has matching helped improve learning?"

provided by the subgroup of five teachers who were in their first year as SWAS teachers. As regards the question asking how frequently teachers made use of DRP scores in planning instruction, all five of the new SWAS teachers designated either "occasionally" or "hardly ever", compared with one of nine more SWAS-experienced respondents (Chi-square=10.4; p = .001). As regards the question asking about the extent to which teachers have been able to match materials with students' DRP scores, five of nine responding veteran SWAS teachers designated "very much", compared with none of the new SWAS teachers (Chi-square = 4.32; p = .04). As regards the question asking whether such matching had helped improve learning, six of nine responding veteran SWAS teachers designated "very much", compared with none of the three new SWAS teachers who responded. Perhaps teachers who were new to SWAS in 1988-89 will make more frequent and effective use of DRP scores as they acquire more training and technical assistance in the future.*

With respect to the task of bringing about a better match between students' DRP scores and instructional materials, we also asked respondents to answer open-ended items which inquired "What did you do to bring about a better match?" Representative responses included the following:

- "We are ordering a supplementary text in world history, which coordinates more appropriately with DRP scores".
- "Selected math texts in accordance with readability levels".
- "Sorted through a multitude of materials. Rewrote materials as needed".
- "In planning with students, we choose from materials on a level of success for students".

*We also examined responses on other parts of the questionnaire to determine whether the five first-year teachers appeared to differ from the more experienced SWAS teachers, but the two groups seldom differed at the .10 level in their responses to other items.

- "I spend extra time on key vocabulary terms and use comprehension strategies to help students understand materials".
- "We sometimes study materials in smaller segments. I also use books a level lower on the DRP to introduce a unit. The students are then better prepared to go to the regular text".
- "I re-write materials and search for analogous materials written at appropriate DRP levels".
- "I pair one high, two average, and one slow learner so they can help each other".
- "I get help from the library and the C.I." [assistant principal for instruction].
- "I've researched as many materials as possible. Got the DRP levels of books, etc".
- "I looked at the student DRP score ranges and ordered materials to include those different range levels, keeping in mind the variety of skills students need help with".
- "I worked with other staff during the summer to match materials with DRP scores".
- "The history book we used primarily during the first semester was written at a considerably lower level than the adopted text. As student performance improved, we moved to the adopted text".

Frequency and Effectiveness of Aspects of Coordination. As mentioned above, one of the central programmatic characteristics of the SWAS program is its emphasis on coordination. From its inception, both the philosophy of the program and its implementation have stressed the principle that learning opportunities for low-achieving urban students can be improved through coordinating instructional methods and materials, relationships

with parents, disciplinary practices and behavioral standards, testing, and other aspects of education. "Linked learning" has served as a motto throughout the history of the SWAS program, and most staff members have worked conscientiously to coordinate activities and services across classrooms in order to provide a more productive learning environment.

To assess SWAS teachers' views concerning the extent to which coordination is being attained in practice, we asked respondents to rate twelve aspects of coordination with respect to frequency and effectiveness. As shown in Table I.4, coordination was designated as being most frequent as regards Parent Communication, Setting Behavior Standards, and Disciplinary Consequences. Coordination was perceived as being least frequent with respect to Testing, Vocabulary, Instructional Materials and Resources, and Concepts. Overall, the average mean score across the twelve aspects of coordination was 2.4 - about halfway between "frequent" and "occasional" on the five-point scale we used to assess frequency.

As regards effectiveness of coordination, the aspects which respondents rated most effective were Instructional Materials and Resources, Disciplinary Consequences, Vocabulary; and Concepts. Aspects for which coordination was viewed as having been least effective were Grading Practices, Parent Involvement Activities, and Comprehension Development Strategies. The overall average mean score on effectiveness assigned to the twelve aspects of coordination was 1.8. - between the "very effective" and "somewhat effective" categories on the four-point scale we used to assess effectiveness. All thirteen aspects of coordination were rated as being at least "somewhat" effective. The data also point to a somewhat paradoxical pattern: although coordination was viewed as particularly effective with respect to Instructional Materials and Resources, Vocabulary,

and Concepts, these three aspects were among the four for which coordination was viewed as taking place least frequently. This discrepant rank-ordering for these aspects of coordination may mean that SWAS teachers perceive aspects of coordination which directly involve instruction as being particularly effective, but insufficient time or other obstacles are inhibiting their capacity to coordinate instruction as much as might be desirable. This possibility should be investigated explicitly in future research on the SWAS program and other interventions designed to improve the comprehension of at-risk students.

Cooperative Learning. Because cooperative learning approaches have received so much attention and emphasis in planning and implementing the SWAS program, we asked respondents, "What percent of classroom time would you estimate your students spend in cooperative learning activities during a typical week?" Among the thirteen teachers who responded, the lowest designation was ten percent, the highest was 67 percent, and the mean was 35 percent.

Respondents also were requested to designate the frequency of use and perceived effectiveness of two cooperative learning techniques ("Learning Partners" and "TGT") that had been emphasized in staff development. As shown in Table I.5, "Learning Partners" received widespread endorsement with respect to both frequency and effectiveness;* "TGT" (i.e. the "Teams/

*During the 1989-90 school year, Learning Partners was implemented systematically in all SWAS units. Positive reactions obtained from students are described in Thinking Breakthrough collated by Fay Gooden and Jackie Baston of the SWAS Resource Office.

Table I.4

SWAS Teachers' Designation of Frequency and Effectiveness of Aspects of Coordination*

Programmatic Aspect Coordinated	Frequency** $\bar{X}$	Frequency** S.D.	Effectiveness*** $\bar{X}$	Effectiveness*** S.D.
Instructional Materials and Resources	2.7	0.8	1.3	0.7
Concepts	2.1	1.0	1.7	0.9
Vocabulary	2.9	1.2	1.6	1.1
Setting Behavior Standards	1.8	1.1	1.8	0.7
Disciplinary Consequences	1.8	1.2	1.5	0.5
Skills Taught	2.6	1.1	1.8	0.9
Grading Practices	2.4	1.2	2.1	0.9
Testing	3.1	0.8	1.9	0.7
Parent Communication	1.7	0.9	1.8	0.7
Parent Involvement Activities	2.5	1.1	2.0	1.0
Incentives and Rewards	2.0	1.0	1.8	0.8
Comprehension Development Strategies	2.6	0.9	2.0	0.7
Average	2.4		1.8	

* Fifteen teachers returned usable questionnaires, but did not respond to every item.

** Very frequent = 1; Frequent = 2; Occasional = 3; Seldom = 4; Never = 5.

*** Very effective = 1; Somewhat = 2; Little = 3; Hardly any = 4.

Games/Tournaments" variation on "Student Team Learning" developed at Johns Hopkins University) was not used as frequently and was viewed as somewhat less effective than Learning Partners. In addition, nine of the fifteen teachers indicated that they "very often" or "often" used "other cooperative teams" approaches, and ten of fourteen who responded indicated that these "other " (unspecified) approaches had at least some effectiveness.

Considerations Contributing to Success. The final part of the SWAS teacher questionnaire asked respondents to rate the importance of seventeen "considerations" that may "have been most important in contributing to the success" of the program. Five response categories were provided, ranging from "very important" = 1 to "not important" = 5.

As shown in Table I.6, a clear plurality of teachers who responded to the seventeen items designated each of the possible considerations except "assistance from counselors in your school" as "very important" or "moderately important". The lower rating given to counselors does not necessarily mean that counselors are seen as unhelpful or uncooperative, but rather may indicate that counseling problems and challenges are being handled primarily by SWAS staff themselves.

Considerations cited most frequently as being "very important" were "small class size", "willingness of SWAS faculty to work hard", "faculty enthusiasm", "flexibility in implementing SWAS", "assistance from SWAS coordinators", "students' willingness to accept help", and "students' willingness to ask for help". Instructional aspects of the SWAS approach, including "utilization of comprehension strategies", "matching of students and materials", and "coordination of teaching across subjects", also

received considerable support as central considerations contributing to success of the program.

Summary

The ninth-grade School-within-a-School (SWAS) program has been operating since 1983-84 at five-to-eight high schools in the Kansas City (MO) Public School District. Designed for students reading significantly below grade level, the SWAS program provides four or five academic teachers and a half-time coordinator for forty-to-one hundred students at each participating school. A full-time Resource Teacher also is assigned to provide central leadership and coordination.

Teachers in SWAS units are specially selected for their willingness and ability in working with at-risk students. Major program components include the following:

- Selection of content-area materials below students' frustrations level for independent work and slightly above their instructional level for classroom instruction.
- Emphasis on use of comprehension-improvement strategies in delivering instruction.
- Common planning periods for teachers.
- Emphasis on motivation in learning.
- Use of the Degrees of Reading Power (DRP) Test to provide ongoing assessment of student progress and program development.
- Intensive staff development, including summer training, after-school and Saturday sessions, and seminars during the regular school day.
- Emphasis on developing productive agreements and collaboration across schools and school-district levels.

Table I.5

SWAS Teachers' Designation of Frequency of Use
and Effectiveness of Cooperative Learning Techniques (N of Responses)*

	Frequency					Effectiveness			
Technique	Very Often	Often	Sometimes	Hardly Ever	Never	Very	Some	Little	Hardly Any
Learning Partners	6	6	3	0	0	8	6	0	1
TGT	1	3	6	2	1	3	4	4	1
Other Cooperative Teams	4	5	6	0	0	6	4	2	2

* Fifteen teachers returned usable questionnaires, but some did not respond to every item.

- Emphasis on linking learning across subjects in order to reinforce vocabulary, concepts, and other aspects of learning.

District evaluations of the ninth-grade SWAS program have been generally positive with respect to fidelity of implementation in accordance with the program's goals and philosophy. In addition, data on students' attendance and performance on the DRP test of reading comprehension have provided encouraging indications of success. For example, attendance in 1987-88 was five percentage points higher in SWAS than in the ninth grade districtwide, and DRP gains among SWAS students averaged eight-to-eleven points between 1985 and 1987.

In the spring of 1989 we administered a questionnaire which was returned by fifteen SWAS teachers. The main part of the questionnaire asked respondents to designate the frequency with which they used thirteen comprehension-improvement strategies and the extent to which they had found these strategies to be effective (see Tables I.2 and I.3). Respondents indicated that they used most strategies at least "sometimes" and that they had found most strategies to have at least "some" effectiveness. Strategies designated as most frequently used included Prediction, Writing/Summarizing, Structured Overview, DRA, Concept Mapping, Anticipation Guides, and PREP (Pre-reading Plan).* Strategies designated as most effective included Prediction, DRA, Concept Mapping, Structured Overview, PREP, and Writing/Summarizing. Thus six of the seven strategies designated as most frequently used also were cited as most effective. The seventh (Anticipation Guides) was tied for seventh in rankings on effectiveness. It is clear that respondents' ratings of frequency of use and effectiveness were highly correlated ($r = .87$).

*A glossary of comprehension-improvement strategies is provided in Appendix A.

Table I.6

Teachers' Ratings of Considerations Contributing to Success of the SWAS Program (N of Responses)*

Consideration	Rating				
	Very Important	Moderately Important	Somewhat Important	Of Little Importance	Not Important
Experience gained by SWAS faculty in previous years in the program	11	4	0	0	0
Experience of SWAS faculty in schools in general	6	6	6	0	1
Utilization of comprehension strategies	9	3	2	0	0
Matching of students and materials	8	3	3	0	0
Assistance from administrators in your school	4	4	2	2	0
Assistance from counselors in your school	2	4	3	4	0
Assistance from SWAS coordinators	11	1	1	0	0
Small class size	12	2	0	0	0
Willingness of SWAS faculty to work hard	13	0	1	0	0
Coordination of teaching across subjects	5	6	2	1	0
Appropriate selection of students	9	4	0	1	0
Students' willingness to ask for help	11	1	1	0	0
Students' willingness to accept help	12	1	1	0	0
Faculty willingness to change methods and procedures	10	3	1	0	0
Faculty enthusiasm	13	1	0	0	0
Flexibility in implementing SWAS	12	2	0	0	0

* Fifteen teachers returned usable questionnaires, but some did not respond to every item.

Other conclusions from the questionnaire administered to SWAS teachers included the following:

- among fourteen teachers who responded to the question "To what extent have you been able to coordinate introduction of vocabulary, use of comprehension strategies, or similar aspects of your day-to-day instruction with instruction in other SWAS classrooms?", five selected "nearly all the time" or "most of the time", seven selected "some of the time", and three selected "once in a while" or "hardly at all".
- nine of the fifteen respondents said they had been able to make use of students' DRP scores "very often" or "often" in planning instruction.
- five of the fifteen respondents selected "very much" when asked "To what extent have you been able to match materials with DRP scores?"; seven others selected "somewhat", and three selected "not very much". Among the twelve respondents who said they had been very or somewha. successful in matching materials with students' DRP scores, all but one responded that matching had been at least "somewhat helpful" in improving learning.
- for both questions cited above regarding use of DRP scores, new SWAS teachers understandably accounted for most of the response indicating relatively little use.
- in rating the frequency with which coordination had been attained regarding a variety of programmatic aspects, respondents designated Parent Communications, Setting Behavior Standards, and Disciplinary Consequences as the most frequently-coordinated aspects, and Testing, Vocabulary, Instructional Materials and Resources, and Concepts as the least frequently-coordinated aspects. Coordination was rated as most effective with respect to Instructional Materials and Resources,

Disciplinary Consequences, Vocabulary, and Concepts, and as least effective with respect to Grading Practices, Parent Involvement Activities, and Comprehension Improvement Strategies. However, all twelve aspects of coordination were rated as being at least "somewhat" effective. The paradoxical pattern wherein coordination regarding Instructional Materials and Resources and Concepts was rated as relatively effective but also relatively infrequent may indicate that insufficient time and other obstacles are hindering SWAS teachers' efforts to further enhance instructional coordination.

- respondents indicated that their students spend an average of 35 percent of classroom time in cooperative learning activities, which are heavily emphasized in SWAS planning and staff development, and that the Learning Partners approach was the cooperative activity they used most frequently and effectively.
- in rating seventeen "considerations" that "may have been most important in contributing to the success of the SWAS program", a plurality of respondents designated each consideration except "assistance from counselors in your school" as "very important" or "moderately important". Considerations cited most frequently as being very important included "small class size", "willingness of SWAS faculty to work hard", "faculty enthusiasm", "flexibility in implementing SWAS", "assistance from SWAS coordinators", "students' willingness to accept help", and "students' willingness to ask for help".

II. ELIZABETH BARRETT BROWNING INTERMEDIATE SCHOOL 115, BRONX, NEW YORK

Browning Intermediate School 115, referred to subsequently in this report as IS 115, is located in Community School District 10 in the Bronx borough of New York City. Enrolling students in grades six through eight, IS 115 serves a predominately low-income student population of which approximately two-thirds are Hispanic and one-quarter are African American. For 1988-89, 79 percent of students were eligible for free lunch and another four percent were eligible for reduced price lunch. Eighteen percent of the 752 students were classified as "general education" and 22 percent of the 58 special-education students were categorized as "Limited English Proficient" in 1988-89.

Sixth-grade students at IS 115 are in self-contained classes for all major subjects and are departmentalized for art, music, physical education, and other "minor" subjects. Seventh-and eight-grade schedules are departmentalized. In general four classes in major subjects are "cluster" scheduled in order to facilitate easy reassignment of students when there are "student/student", "student/teacher", or other adjustment problems (Goldberg, 1989).

In addition to 36 classroom teachers and Principal Ira Goldberg, staff assigned at IS 115 for 1988-89 included the following:

- 3 assistant principals
- 2 deans of students
- 1 special-education supervisor
- 2 guidance counselors
- 1 special-education social worker
- 1 drug prevention counselor
- 1 AIDP counselor (district anti-dropout program)
- 2 "family workers"

- 3 Home and Career Skills teachers
- 1 Orchestra/Music teacher
- 1 Computer teacher
- 1 Art teacher
- 1 Technology teacher
- 1 Librarian
- 3 Second Language teachers
- 1 Physical Education teacher
- 2 Swim teachers
- 1 mini-school director teacher (see below)
- 1 Vocal Music teacher
- 5 Chapter 1 - Communication Arts teachers
- 1 Communication Arts - Bilingual (Ch. 1) teacher
- 1 Chapter 53 Reading Resource teacher/Staff Developer
- 1 compensatory-education Math teacher
- 1 compensatory-education ESL teacher
- 1 compensatory-education, anti-dropout program teacher
- 1 compensatory-education, anti-dropout program facilitator
- 4 school aides
- 2 school-security personnel
- 1 school-community liaison
- 12 paraprofessionals
- 4 secretaries
- 6 lunchroom personnel

Reading Comprehension Performance

Despite relatively high mobility among the student population at IS 115, staff appear to have registered much success in improving students' reading comprehension scores. (Mobility rates at IS 115 have averaged about forty percent per year in recent years.) The best evidence for this conclusion is provided in the IS 115 1988-89 profile prepared at the City Board of Education as part of the State Regents' Excellence and Accountability Program Standards and the Chancellor's Minimum Standards tabulations. The IS 115 profile showed that 61 percent of sixth-and eighth-grade students in the lowest DRP quartile in the previous year made gains of seven or more DRP units in 1988-89, compared with percentages of 44 percent in 1987-88 and 47 percent in 1986-87, respectively.* Data provided in the profile also showed that 44% of "general-education" sixth- graders (N=117) gained seven or more DRP points in 1988-89, and 54% of "general-education" seventh-graders (N=216) gained seven or more points.

Additional data in the IS 115 profile included information (shown in Table II.1) on DRP scores for tested students other than those classified as special education, resource room, or Limited English Proficient. The DRP averages shown use "new" DRP norms which were established in 1987-88. As indicated in Table II.1, large gains in the percentage of students above the fiftieth percentile were apparent in the seventh and eighth grades. The data in Table II.1 also indicate that a large majority of students tested at IS 115 in June of 1989 were on the register throughout the academic year.

*These data do not include special-education, resource-room, and Limited-English- Proficient students, who were excluded from testing.

Table II.1

Percentages of Students at IS 115 Above the DRP Fiftieth Percentile* in 1987-88 and 1988-89, by Grade

Grade	1987-88	1988-89	Students Tested as Percent of School Register from 10/1/88 to 6/30/89
6 (N=130)	33	34	89
7 (N=240)	23	41	81
8 (N=245)	28	37	89

* 1987-1988 norms.

Educational Improvement Programs at IS 115

This section provides information about major programs and interventions that have been initiated to improve instruction-particularly with respect to students' comprehension skills and other aspects of education at IS 115. Particularly in the case of a vibrant inner-city school in which faculty are attempting to bring about fundamental reform on the scale obvious at IS 115, a comprehensive description of all important programs and activities would require scores of pages and even then could not capture all significant nuances and aspects of reform efforts. Rather than attempting to provide a comprehensive description of this kind, this section briefly describes some of the programs and activities that interviews, documents describing recent developments, and some limited observation suggested have been most central in accounting for apparent gains in students' comprehension performance.

Center for Educational Leadership and Project Basics. Located at a relatively central site in Manhattan, the Center for Educational Leadership (CEL) provides assistance to selected New York City schools at which faculty agree to participate in systematic instructional-improvement efforts.* The largest program conducted by the CEL is Project Basics, a dropout-prevention program which began in 1985-86 and which includes thirteen intermediate schools and six high schools from all parts of New York City. Each school has a leadership team of eight-to-twelve teachers and administrators. Other aspects of Project Basics include an annual

*The CEL is sponsored by the New York Urban Coalition, the Mayor's Office for Educational Services, and the New York City Board of Education. Additional support is provided by the New York State Education Department, the Office of the Manhattan Borough President, American Express, Chemical Bank, Equitable, Liz Claiborne Foundation, A.T.&T, the New York City Youth Bureau, United Way, the Rosenthal Foundation, Carnegie Corporation, New York Community Trust, New York State Division of Substance Abuse Services, and the Aaron Diamond Foundation.

series of one-day workshops (i.e. the Reading Comprehension and Cognitive Development Program Series, or CCDP/DRP) at which consultants address possibilities for using instructional strategies to improve students' comprehension skills and for initiating other educational improvements, an annual weekend conference held each Fall for participating faculties, and provision of continuing staff development assistance.

As part of its participation in Project Basics, IS 115 has received assistance one day every week for the past four-and-one- half-years from a staff development specialist assigned through the CEL. Augusta Mann served in this position for most of this period. Maria Davis has filled this position since Ms. Mann was appointed Manager of Project Basics early in the 1989. Each school in Project Basics also receives a discretionary fund of $3,000 annually to assist it in carrying out designated school- improvement efforts.

Leadership Team. As a participant school in Project Basics, IS 115 has a formally-organized Leadership Team to help develop and carry out policies and practices aimed at attaining school goals involving improvement in students' communications performance and other learning objectives identified through systematic needs assessments. The Leadership Team at IS 115 has eleven members including the principal. Most members have been on the team for most of the period since Project Basics was initiated in the Fall of 1985. Members receive a CEL honorarium of $500 per year.

In accordance with Project Basics Guidelines, teachers who apply for Leadership-Team membership are screened and recommended by a committee consisting of the chairperson, the principal, district-office representatives, and the CEL staff-development specialist. Members serve on subcommittees involving activities such as design and conduct of workshops,

publication of a newsletter, development of school goals and action plans, and improvement in math, writing, and other subject areas. In general, members of the Leadership Team report that they expend considerable amount of time and energy working on team activities.

On-Site Personnel Providing for Staff and Organizational Development. Coordinated efforts of several key persons have provided IS 115 with considerable technical assistance to encourage and facilitate effective building-and classroom-level implementation of comprehension-improvement strategies and related staff-and organizational-development activities. Among these persons have been the following:

- a Reading Resource Teacher/Staff Developer (Charlotte Storper) who is funded through District 10 and State of New York resources and devotes much of her time to providing staff development and other forms of technical assistance dealing with comprehension-improvement strategies.
- the CEL Project Basics staff development specialist (formerly Augusta Mann, now Maria Davis) who works one day a week at IS 115. Emphasis in the work of this specialist has been on "sharing and building leadership functions and capacity, providing information about school-improvement trends and experience elsewhere, helping to plan staff development and obtain local, regional, and national consultants, and disseminating information and materials about comprehension-improvement strategies".*
- an Assistant Principal for Language Arts (Evelyn Miller) who helps in planning and implementing training in comprehension-improvement strategies and related activities.

*Interview with Augusta Mann, December 11, 1989.

- teachers and administrators on the Leadership Team, who have attended numerous workshops at CEL, local colleges and universities, and elsewhere, and in some cases are released from some other duties to provide technical assistance and conduct staff-development activities.
- numerous nationally-known consultants who have conducted IS 115 workshops dealing with comprehension-improvement strategies.* In some cases, services of these consultants have gone beyond building-level activities to provide classroom-level assistance.
- District 10 specialists in curriculum and instruction who provide various forms of assistance and also conduct regular meetings attended by the Reading Resource Teacher/Staff Developer and other IS 115 personnel. In particular, District 10 staff have helped IS 115 and other schools develop and implement a holistic language program (i.e. Aspects of Critical Thinking, or ACT) designed to stimulate improvement in instructional strategies and materials in English and Communication Arts.
- an IS 115 English teacher who attended Lehman College training on Writing Across the Curriculum, and then received a reduced teaching load in order to work with other faculty.

Staff Development Focussed on Comprehension-Improvement Strategies. Over the past few years the Leadership Team, working with CEL's staff-development specialists, has carefully designed and implemented an in-service training program that included an increasing number of faculty each year. In line with IS 115's annual instructional-improvement plans, emphasis has been

*Most of these consultants have been located through the College Board Comprehension and Cognitive Instruction Program. Some of the principles of teaching and learning emphasized in the CCIP are described in Appendix B.

placed on comprehension-improvement strategies*, though staff development also has dealt with planning and leadership skills (particularly for members of the Leadership Team), content in math and other subjects, classroom management, and other topics. Interviews we conducted indicated that by the Fall of 1989, approximately two-thirds of certified staff were or had been participating in such training.

In addition, emphasis in staff development shifted from reliance on outside consultants during the first year or two to internal resources in 1988 and 1989. As staff development placed growing emphasis on demonstration, modelling, and coaching with respect to comprehension strategies in the classroom, an increasing percentage of training activities has been planned and carried out by classroom teachers. Members of the Leadership Team report that each year an increasing number of teachers are seeking help in learning to implement comprehension strategies more effectively. Other aspects of expanded and systematic emphasis on staff development have included the following:

- participation of faculty in fifteen-week basic and advanced courses on process writing, as part of New York City Writing Project activities in conjunction with Lehman College.
- establishment of a professional-resource library that includes videotapes of workshops conducted at IS 115, as well as information and materials dealing with comprehension-improvement strategies.

*For example, to help attain a goal aiming to "reduce the number of students reading two years or more below grade level", the 1989-90 plan includes an objective stating that, "By January, 1990, 100% of the Leadership Team members will have engaged in coaching each other, and by June, 1990, 100% of the team will have coached one teacher not on the team". Activities listed in support of this objective include the following: "identify consultant, attend workshops, practice skills, schedule winter-class visits, demonstrate instructional skills, model lessons, observe teachers, provide feedback to teachers, continue on-going coaching".

One particularly central consideration in carrying out effective staff development at IS 115 has been strong administrative leadership in finding ways for teachers to participate in staff development. Through juggling complicated schedules, providing "coverage" for participating teachers, obtaining funds for stipends from a variety of sources, providing double periods for meetings of the Leadership Team, and other means, Principal Ira Goldberg and his assistants have made it possible for teachers to participate meaningfully on a regular basis. Although lack of time and funds for staff development still constitute serious problems, administrative support for staff development has made it possible to move beyond the initial, tentative stages of schoolwide reform and renewal.

Salvadori Mini-School. Established in 1987-88, the Salvadori Mini-School on the Built Environment includes four classes of seventh graders and four classes of eighth graders. Since maximum class size is 22 and average class size is about twenty, approximately 160 students participate each year. Most students assigned to Salvadori have had poor previous attendance, are potential dropouts, or exemplify other aspects of "at-risk" classification. Placement is contingent on requests and/or agreement of students and their parents. Staff includes eight subject area teachers*, two Technology teachers (one of whom teaches architecture), one full-time project director/teacher (Phyllis Shulman), one attendance facilitator, two "family workers", and one guidance counselor. Teachers have a common preparation period to facilitate cooperative planning and effective delivery of services to students.

*Each grade (seventh and eighth) includes an English/Language teacher, a mathematics teacher, a social studies teacher, and a science teacher.

The Salvadori Mini-School has received start-up and continuing assistance through the City College of New York's Salvadori Educational Center on the Built Environment. The Salvandori Center was initiated after an 82-year-old engineer (Mario Salvadori) served as a volunteer in several New York City schools and developed an instructional approach with curriculum materials to motivate and improve learning among disadvantaged students through study and analysis of the many subjects and topics that influence the nature of urban environments*. In addition to regular classes, Salvadori students spend two or three periods a week in a large "project room" set aside for work on architectural models and other special topics and activities, with particular attention given to Architectural Structure, City Planning, Landscaping, and Mechanical Systems. Students at IS 115's mini-school have constructed scale models of parts of New York City, visited cultural, economic, and other institutions, engaged in various aspects of urban analysis and planning, and generally participated in urban environmental studies that draw on and infuse materials from English, math, science, history, and other subjects.

Improvement of Climate and Discipline. Observers familiar with developments at IS 115 believe inadequate discipline and related negative manifestations of educational climate had become significant problems in the 1985-1987 period, and that these problems were obstructing success of Project Basics and other improvement efforts at IS 115. Recognizing these problems, administrators and teachers initiated a number of actions that included the following:

*Edward B. Fiske, "Lesson", The New York Times, April 19, 1989, p. B16; "Students Turn Manhattan Into an Isle of Joy", The New York Academy of Services Science Focus, Spring 1989, p.1.

- consultant assistance was requested and received from CEL's Project Access. Partly as a result, an active Peer Leadership Team has been established, with three functional committees respectively addressing discipline, nutrition, and custodial management.
- teachers attended classroom management workshops at the school site and elsewhere.
- faculty established a discipline-improvement committee that met regularly in 1987 and 1988. Among other actions, the committee produced a student handbook which defines and describes students' rights and responsibilities.
- participations continues in a Fordham University Hispanic Research Center Program (i.e., the "Hero and Heroine" program) that offers bilingual students opportunities to build a strong cultural identity through language arts and social studies activities.
- steps such as establishment of the Salvadori Mini-School were taken to enhance student interest in learning and thereby diminish discipline problems.
- the schedule has been revised to provide for a "captive lunch" period after it was determined that movement of students in and out of the school during lunch had become a major problem*.
- utilization of comprehension-improvement strategies and other innovations in curriculum and instruction (e.g. Cooperative Learning in some classrooms) apparently helped many students become more successful academically, which, in turn, probably contributed to school-climate improvements.

*Intervew with Ira Goldberg, December 12, 1989.

- students have prepared, published, and disseminated printed booklets titled A Teen Guide to the Bronx (1988) and A Celebration of Cultural Diversity (1990).
- efforts have been made to encourage and facilitate more meaningful student-government activities. Following a suggestion from student government representatives, a monthly calendar is now published to inform parents and students of important school events. The student-government organization also sponsored a contest to select a school logo, which is now widely used on T-shirts and sweatshirts at IS 115.

As of the Fall of 1989, it appeared that efforts to improve school climate had contributed to a more positive climate, and that gains in climate in turn were facilitating improvements in teaching and learning at IS 115*.

Intensive Assistance for Low Readers. In line with research indicating that disadvantaged students performing poorly in comprehension and other higher-order skills require intensive personal assistance and mediation if they are to improve substantially (Levine 1988), many of the instructional arrangements at IS 115 are designed in part to deliver such assistance. Among the organizational practices and patterns which have been introduced at least in part to serve this purpose are the following:

- the Reading Staff Developer, six reading teachers, and six paraprofessionals provide small-group and individual help in reading and communications arts for low performing students.
- low readers are enrolled in a reading class (funded by either Chapter 1 or New York State sources), with a pupil-teacher ratio of 8:1, that meets every day.

*Interview with Augusta Mann, December 11, 1989.

- as in other New York City intermediate schools, students retained in the seventh grade due to low performance are placed in a relatively small class (i.e. "Gates" program class) taught by a specially-trained teacher.
- low performing sixth graders are placed in Chapter 1 reading classes with two teachers.

Teacher Questionnaire

In June of 1989 we prepared and distributed an anonymous questionnaire designed to assess IS 115 teachers' reactions to comprehension-improvement strategies which had been emphasized in Project Basics staff-development sessions, workshops in the CEL Reading Comprehension and Cognitive Development Program Series, activities sponsored or conducted by the Leadership Team, District 10 instructional-development programs, and other related staff-development activities which had been underway for several years. Because questionnaires were not distributed until very late in the Spring semester, very few were returned. Accordingly, we re-distributed the questionnaires early in the fall of 1989. As a result, we obtained eighteen reasonably-complete questionnaires from faculty who designated their major teaching fields as follows: three English/Language and/or Writing teachers, four reading teachers, four Common Branch teachers (i.e. self-contained 6th grade), two social studies teachers, one science teacher, and four special education teachers.

While the overall rate of return of questionnaires was still low, we should note that some teachers who had not yet participated in substantial training with respect to comprehension strategies apparently did not respond when they examined the questionnaire and found that it dealt with implementation of these strategies. We estimate that the eighteen teachers who did respond constitute a solid majority of teachers who had been extensively trained in and were making meaningful use of comprehension strategies by the Fall of 1989. Therefore, we concluded that the questionnaires provided useful data regarding the extent to which this

subgroup of IS 115 teachers were using the strategies, as well as their assessment regarding the effectiveness of the strategies.

When the questionnaire was distributed the second time, five IS 115 faculty who had responded the first time completed it again. Fortuitously, this enables us to derive a measure of the questionnaire's reliability when completed twice within a period of approximately three months. We did not duplicate respondents in the sample of eighteen, but instead included whichever questionnaire from each teacher who responded twice was most complete.

To estimate reliability, we tabulated the number and percentage of Likert-type item responses which were one or more categories different within the pairs of questionnaires completed by teachers who responded twice. (These items and the response categories are shown in Tables II.2 and II.3.) There were 154 items on which the five teachers who responded twice completed a given item each time. Of these 154 items, the responses to 103 items (67 percent of the 154) were exactly the same on both the first and second administration. Additional tabulations showed that for 143 of the 154 items (93%), respondent answers on the second administration were no more than one Likert-category different than was true on the first administration. We believe that these data support the conclusion that our relatively-straightforward questionnaire provided generally-reliable information concerning respondents' perceptions involving use and effectiveness of comprehension-improvement strategies and related items on the questionnaire.

Regarding frequency of use of each of eighteen comprehension-improvement strategies,* teachers were asked to check one of five response categories, ranging from "very often" to "never". "Very often" was coded as one; "never" was coded as five.

As shown in Table II.2., the comprehension-improvement strategy respondents replied they used most frequently was Re-telling** for which fourteen of fifteen respondents selected "very often" or "often". Frequency of use designated for Prediction, Mapping, and Webbing was very nearly as much as for Re-telling. Guided Reading, Anticipation Guides, Self-generated Questions, QAR, and Questions Only also were reported as being used frequently, with average scores of 2.5 or less on the five-point scale.

Strategies cited as being used least frequently included Pattern Guides, Strip Story, and K-W-L. However, all but these three strategies and Keyword Categorization had average scores below 3 (i.e., designated use as "Sometimes") on the five point scale, and the average score across the eighteen strategies was 2.6--very close to the mid-point between "often" and "sometimes". Clearly, the eighteen IS 115 faculty members who responded to our questionnaire report using comprehension-improvement strategies with some regularity.

Regarding the effectiveness of comprehension-improvement strategies they had used, respondents were asked to designate effectiveness on a four-point continuum ranging from "very" to "hardly any". "Very" effective was scored as one; "hardly any" effectiveness was scored as four. Respondents

*Strategies designated in the questionnaire were selected after consultation with persons familiar with instructional developments and in-service training at IS 115.

**See Appendix A for a glossary describing each strategy.

Table II.2

IS 115 Faculty Designation of Frequency of Use of Selected Comprehension-Improvement Strategies*

	Frequency of Use (N of Responses)					
Strategy**	Very Often	Often	Sometimes	Hardly Ever	Never	Mean ***
K-W-L	1	1	4	2	3	3.5
GRAPHIC ORGANIZERS	5	2	3	4	1	2.6
TIME LINES	2	3	6	5	0	2.9
JOURNAL ENTRIES	3	3	7	2	1	2.7
RE-TELLING	8	6	0	1	0	1.6
DRTA	3	2	4	1	2	2.8
PREDICTION	10	5	2	0	1	1.7
MAPPING	9	2	7	0	0	1.9
WEBBING	9	2	6	1	0	1.9
QUESTIONS ONLY	5	2	7	0	2	2.5
SELF-GENERATED Q's	2	7	6	1	0	2.4
QAR	4	6	3	3	1	2.5
GUIDED READING	4	9	3	1	0	2.1
THREE-LEVEL GUIDES	3	4	4	2	3	2.9
PATTERN GUIDES	2	0	4	3	4	3.6
ANTICIPATION GUIDES	5	4	7	0	1	2.3
KEYWORD CATEGORIZATION	2	2	6	3	2	3.1
STRIP STORY	0	3	5	4	4	3.6

* Eighteen faculty members returned usable questionnaires, but some did not respond to every item.

** A glossary describing each strategy is provided in Appendix A.

*** Very often = 1; never = 5.

who had not used strategies frequently and therefore might not feel competent to assess effectiveness could select "not applicable", or might not respond at all despite our request to answer every item. Respondents appear to have generally availed themselves of these opportunities to avoid assessing strategies they used infrequently or not at all: with one exception, the four strategies designated as being used least frequently in Table II.2 were the ones which had the highest total numbers of "not applicable" plus non-responses.

As shown in Table II.3, the strategies which respondents designated as most effective were Journal Entries, Prediction, Questions Only, Guided Reading, and Keyword Categorization, followed closely by DRTA, Mapping, Webbing, Anticipation Guides, K-W-L, Graphic Organizers, Self-generated Questions, QAR, Three-Level Guides, and Time Lines. Strategies cited as least effective were Strip Story and Pattern Guides, which were also the two strategies with the highest average scores (i.e. least frequently used) shown in Table II.2. In general, respondents as a group reported that the eighteen strategies had at least some effectiveness: only two of the eighteen had average scores above 2 (i.e., less than "some" effectiveness) on the four-point response scale, and for each of the eighteen strategies, a clear majority of faculty who responded selected either the "very" effective or "some" effectiveness responses.

The results reported above indicate that respondents tended to rate the strategies they used most frequently as most effective, and vice versa. This conclusion was further supported by statistical analysis indicating that the correlation between the mean scores shown in Tables II.2. and II.3 is .65 - a relatively high correlation given the low range in mean scores in Table II.3.

Table II.3

IS 115 Faculty Designation of Effectiveness
of Selected Comprehension-Improvement Strategies *

	Perceived Effectiveness (N of Responses)					
Strategy**	Very	Some	Little	Hardly Any	Not Applicable	Mean ***
K-W-L	4	2	1	1	2	1.9
GRAPHIC ORGANIZERS	5	6	0	2	1	1.9
TIME LINES	3	8	1	1	1	2.0
JOURNAL ENTRIES	7	4	0	0	1	1.4
RE-TELLING	9	2	0	2	0	1.6
DRTA	4	4	2	0	2	1.8
PREDICTION	9	5	1	0	1	1.5
MAPPING	6	7	3	0	0	1.8
WEBBING	6	7	3	0	0	1.8
QUESTIONS ONLY	4	8	0	0	2	1.7
SELF-GENERATED Q's	4	7	3	0	0	1.9
OAR	6	3	5	0	1	1.9
GUIDED READING	7	7	0	1	0	1.7
THREE-LEVEL GUIDES	5	3	0	2	3	1.9
PATTERN GUIDES	1	4	1	1	4	2.3
ANTICIPATION GUIDES	6	6	1	1	1	1.8
KEYWORD CATEGORIZATION	4	4	1	0	2	1.7
STRIP STORY	4	3	2	2	3	2.2

* Eighteen faculty members returned usable questionnaires, but some did not respond to every item.

** A glossary describing each strategy is provided in Appendix A.

*** Very = 1; hardly any = 4.

Of course, it is not surprising that teachers who find a strategy to be effective report using it frequently or, conversely, that those who do not often use it report that it is not particularly effective. Correlational relationships of the kind reported and discussed in this section cannot support definitive conclusions regarding the direction of causation, i.e., whether teachers use a strategy frequently because they find it effective or do not designate it as effective because they seldom use it. It is possible and perhaps even likely that both these tendencies are present simultaneously in the underlying classroom patterns and perceptions that produced the data reported in this section.

In addition to the Likert-type items dealing with the effectiveness of comprehension-development strategies, respondents also were asked to answer the open-ended question, "Please list the three comprehension development strategies that have worked best for you in the classroom". As shown in Table II.4, Prediction, Anticipation Guides, QAR, and Webbing, were designated eight, six, five, and five times, respectively. However, it should be noted that three respondents used the term "Mapping-Webbing", so that Mapping, Webbing, and Mapping-Webbing together received eleven designations, and thus as a combination might well be considered the most effective strategy in the entire set. We also should note that fifteen of the eighteen strategies listed in Tables II.2 and II.3 were designated by at least one respondent. (The three strategies not designated by any respondent were Self-generated Questions, Three-level Guides, and Strip Story.) Conversely, one respondent designated Cloze and another cited

Table II.4

Strategies Designated by IS 115 Faculty in Response to the Question, "Please list the three comprehension development strategies that have worked best for you in the classroom" *

Strategy **	Number of Designations
PREDICTION	8
ANTICIPATION GUIDES	6
QAR	5
WEBBING	5
GUIDED READING	4
DRTA	3
GRAPHIC ORGANIZERS	3
MAPPING	3
MAPPING-WEBBING	3
TIME LINES	3
RE-TELLING	3
JOURNAL ENTRIES	3
CLOZE	1
KEYWORD CATEGORIZATION	1
KWL	1
LITERATURE LOGS	1
PATTERN GUIDES	1
QUESTIONS ONLY	1

* Seventeen respondents designated three strategies; one respondent designated four.

** A glossary describing each strategy is provided in Appendix A.

Literature Logs, even though these are not strictly comprehension-improvment strategies and had not been listed on the questionnaire.

Comparison of Tables II.3 and II.4 indicates that the strategies cited as most effective in Table II.3 (i.e., Prediction, Re-telling, Question Only, Guided Reading, Keyword Categorization, Mapping, Webbing, Anticipation Guides) generally were among the most frequently-cited in responses to the open-ended question shown in Table II.4. Conversely, strategies cited as least effective in Table II.3 (i.e. Strip Story, Pattern Guides) received little or no support in responses to the open-ended question. These patterns provide encouraging indications that respondents treated the questionnaire seriously and responded reliably, and, by extension, that they are making frequent and in their view effective use of many of the strategies shown in Tables II.2, II.3, and II.4.

Use of DRP Scores. The questionnaire administered to IS 115 faculty included several items bearing on use of the DRP. First, respondents were asked, "How frequently have you been able to make use of students' DRP scores in planning instruction?". In response, five teachers said they had been able to use DRP scores "very often" or "often", five said "occasionally", five said "hardly ever", and two said "never". Thus, nearly sixty percent said they had been able to use DRP scores at least occasionally in planning instruction.

Next, respondents were asked, "To what extent have you been able to match materials and students' DRP scores?" In response, two teachers said "very much", four said "somewhat", nine said "not very much", and two said "not at all". Thus, nearly two-thirds said they had not been able to match materials and students' DRP scores very much, if at all.

However, responses to the open-ended item "What did you do to bring about a better match?" indicated that several teachers had taken other kinds of actions to provide appropriately-challenging materials for students. Among these responses were the following: "I use the Stanford Diagnostic Test"; "I encourage free reading at the appropriate level"; "I use informal reading inventories"; "I bring in teacher-made phonics and structural-analysis materials"; "I group by interest and by 'actual' reading level" [which this teacher considered to be frequently different from recorded DRP scores]; and "I use the district inventory, my own judgement, and an eclectic approach". Those responses may indicate that a significant proportion of IS 115 teachers are finding ways to improve the match between students and materials, with or without DRP scores.

In addition, it should be emphasized that much work has been done in District 10 to identify learning objectives and materials believed to be appropriate in each subject at grades six through eight. Those objectives and materials seem to be widely used at IS 115. Various other interventions at IS 115, such as establishment of the Salvadori Mini-School, conduct of the Gates program for students retained in the seventh grade, and provision of small-group reading instruction for low achievers, probably are also contributing on a school-level basis to improvement in the match between materials and students' current performance levels.

Respondents also were asked, "When (if) you have been able to match materials and students' DRP scores, how much has matching helped improve learning?". One responded "very much", ten selected "somewhat", and five responded either "not very much" or "hardly ever". Thus, slightly more than two-thirds of those who responded felt that matching of materials with

students' DRP scores, when possible, had helped to improve students' learning at least somewhat.

Number and Perceived Value of Comprehension-Improvement Training Activities. When requested to "state or estimate the number of workshops or related training activities you have attended that have dealt with comprehension development", teachers reported that they had attended an average of eleven such activities, with a low of three and a high of thirty. When asked to designate "how valuable these workshop and activities have been to you", eight selected "very valuable", eight selected "valuable", and one responded "not very valuable". No respondent selected "not at all valuable". Correlation analysis showed that there was no relationship between reported number of training activities attended and respondents' assessment of their value.

Reported Frequency of Use and Effectiveness of Strategies and Perceived Value of Training Activities. To examine the relationships between frequency of use and reported effectiveness of comprehension-improvement strategies on the one hand and respondents' perceptions of the value of workshops and other training activities in which they had participated on the other, we categorized respondents who rated this training "very valuable" as high on Perceived Value of Workshops (N=9); those who rated the training as "valuable" or only "somewhat valuable" (N=8) were categorized as low. (No respondent rated the training as "not at all valuable"). Reported frequency of use and perceived effectiveness scores for the two groups are shown in Tables II.5 and II.6., respectively.

As shown in Table II.5, respondents who were high on Perceived Value of Workshops reported relatively more frequent use (that is, had lower frequency scores in Table II.5) for eight strategies for which the

Table II.5

Relationships Between Reported Frequency of Use* of Strategies and Perceived Value of Workshops

	Perceived Value of Workshops**							
	Low			High				
Strategy	Freq. $\bar{X}$	S.D.	N	Freq. $\bar{X}$	S.D.	N	P	Effect Size***
K-W-L	4.0	1.0	5	2.8	1.5	5	.17	.96
GRAPHIC ORGANIZERS	3.4	1.1	7	1.7	1.3	7	.02	1.40
TIME LINES	2.6	1.0	7	3.1	1.1	8	.33	- .48
JOURNAL ENTRIES	3.0	1.3	7	2.5	1.1	8	.43	.42
RE-TELLING	1.8	1.2	6	1.5	.5	8	.49	.35
DRTA	3.3	1.5	6	1.8	.8	5	.07	1.30
PREDICTION	2.2	1.3	9	1.3	.5	8	.06	1.00
MAPPING	2.3	.9	9	1.5	.9	8	.08	.89
WEBBING	2.4	1.0	9	1.5	.9	8	.06	.95
QUESTIONS ONLY	2.0	.9	8	3.3	1.4	7	.05	-1.13
SELF-GENERATED Q's	2.4	.5	7	2.5	.9	8	.86	- .14
QAR	1.8	.7	8	3.4	1.1	8	.00	-1.78
GUIDED READING	2.0	.5	8	2.3	1.0	8	.55	- .40
THREE-LEVEL GUIDES	3.9	1.2	7	2.3	1.0	8	.02	1.45
PATTERN GUIDES	3.8	1.1	5	3.7	1.4	7	.91	.08
ANTICIPATION GUIDES	3.0	.9	8	1.8	.9	8	.02	1.33
KEYWORD CATEGORIZATION	3.0	1.1	6	3.4	1.2	8	.56	.35
STRIP STORY	4.1	.9	7	3.3	1.0	8	.10	.84

* High scores on frequency represent infrequent reported use.

** See text for definitions of low and high.

*** Effect sizes were estimated by subtracting the second mean from the first, and dividing by the mid-point of the standard deviations.

statistical probability that differences of the magnitude shown would occur by chance was less than ten in a hundred. These strategies were: Graphic Organizers, DRTA, Prediction, Mapping, Webbing, Three-level Guides, Anticipation Guides, and Strip Story. Conversely, at this same level of statistical significance respondents high on Perceived Value of Workshops reported relatively less frequent use of Questions Only and QAR.

Perhaps equally or more important in view of the small numbers of respondents in the two groups, effect sizes* in all the comparisons indicated above were substantial. Effect sizes also appeared at a moderate or higher level favoring respondents high on Perceived Workshop Value for K-W-L, Journal Entries, Re-telling, and Keyword Categorization, whereas meaningful effect sizes for Time Lines and Guided Reading favored respondents low on Perceived Workshop Value.

Similarly, respondents high on Perceived Workshop Value had relatively more positive opinions regarding the effectiveness of strategies (i.e. lower effectiveness scores in Table II.6) at a probability level of .10 or lower with respect to K-W-L, Graphic Organizers, Journal Entries, Prediction, Mapping, Webbing, Three-level Guides, Anticipation Guides, and Strip Story, whereas respondents low on Perceived Workshop Value had relatively more positive views of the effectiveness of QAR at the .10 level or lower. Respondents high on Perceived Workshop Value also had relatively more favorable views of the effectiveness of several additional strategies, as indicated by moderate or large effect sizes with regard to

*Effect sizes were approximated by subtracting one mean score from the other and dividing by the mid-point between the two groups' standard deviations. For effect sizes calculated for the difference between means, Jacob Cohen (1988) classifies .2 as "small", .5 as "medium", and .8 as "large".

Table II.6

Relationships Between Reported Effectiveness of Use* of Strategies and Perceived Value of Workshops at IS 115

	Perceived Value of Workshops**							
	Low			High				
Strategy	Eff. $\bar{X}$	S.D.	N	Eff. $\bar{X}$	S.D.	N	P	Effect Size***
K-W-L	2.7	1.0	3	1.2	1.0	4	.03	3.00
GRAPHIC ORGANIZERS	2.4	1.1	7	1.2	.5	5	.05	.89
TIME LINES	2.0	.6	7	2.2	1.1	5	.69	- .24
JOURNAL ENTRIES	1.8	.5	4	1.2	.4	6	.08	1.33
RE-TELLING	2.0	1.4	7	1.2	.5	5	.26	.62
DRTA	2.3	1.0	4	1.4	.5	5	.14	.75
PREDICTION	1.8	.8	8	1.6	.4	6	.10	.33
MAPPING	2.2	.7	9	1.3	.5	6	.02	1.50
WEBBING	2.2	.7	9	1.3	.5	6	.02	1.50
QUESTIONS ONLY	1.6	.5	8	2.0	.0	3	.26	-1.60
SELF-GENERATED Q's	1.9	.7	7	2.2	.8	6	.46	- .40
QAR	1.6	.7	8	2.6	.9	5	.06	-1.25
GUIDED READING	1.6	.5	8	1.8	1.2	6	.66	- .23
THREE-LEVEL GUIDES	3.0	1.2	4	1.2	.4	5	.01	1.50
PATTERN GUIDES	3.0	1.0	3	2.0	.0	3	.16	2.00
ANTICIPATION GUIDES	2.4	.8	7	1.2	.4	6	.01	2.00
KEYWORD CATEGORIZATION	1.8	.8	5	1.7	.6	3	.82	.14
STRIP STORY	3.2	.8	5	1.4	.5	5	.04	2.77

* High scores on effectiveness represent low reported effectiveness.

** See text for definitions of low and high.

*** Effect sizes were estimated by subtracting the second mean from the first, and dividing by the mid-point of the standard deviations.

Re-telling, DRTA, and Pattern Guides, whereas respondents low on Perceived Workshop Value had moderate or large effect sizes indicating relatively positive opinions about the effectiveness of Self-generated Questions and QAR.

In general, the preceding analysis indicated that IS 115 teachers who rated comprehension-improvement training activities as "very valuable" reported relatively more frequent use of and relatively more positive opinions regarding the effectiveness of most comprehension-improvement strategies, than did teachers who rated those training activities as "somewhat valuable". However, the latter group reported relatively more frequent of and relatively more positive views of Questions Only and QAR. It is easy to understand why teachers who found the training activities to be relatively more valuable should view the comprehension-improvement strategies as more effective and report using them more frequently. Regarding the opposite patterns for Questions Only and QAR, we do not have a theory to explain this finding if subsequent research were to establish more adequately that it indeed is reliable.

Reported Frequency and Effectiveness of Use of Strategies and Teaching Experience at IS 115. We also examined the data for possible relationships between reported frequency of use and perceived effectiveness of comprehension-improvement strategies on the one hand and years of teaching experience at IS 115 on the other. For purposes of this analysis, respondents were divided into two groups, those with eight or fewer years of experience and those with nine or more years of experience at IS 115. Results are presented in Tables II.7 and II.8.

As shown in Table II.7, respondents high and low in experience at IS 115 differed at the .10 significance level on reported frequency of use of

Table II.7

Relationships Between Reported Frequency of Use*
of Strategies and Years of Teaching Experience at IS 115

	Experience at IS 115 **							
	Low			High				
Strategy	Freq. $\bar{X}$	S.D.	N	Freq. $\bar{X}$	S.D.	N	P	Effect Size***
K-W-L	3.2	1.5	5	3.7	1.2	6	.58	- .37
GRAPHIC ORGANIZERS	2.3	1.4	7	2.9	1.5	8	.44	- .41
TIME LINES	2.6	1.2	8	3.1	.8	8	.35	- .50
JOURNAL ENTRIES	2.9	1.0	8	2.5	1.3	8	.53	.23
RE-TELLING	1.3	.5	7	1.9	1.0	8	.18	- .80
DRTA	3.0	.8	4	2.6	1.7	8	.69	.32
PREDICTION	1.6	.7	10	1.9	1.5	8	.60	- .26
MAPPING	1.7	.9	10	2.1	1.0	8	.37	- .42
WEBBING	1.7	.9	10	2.3	1.2	8	.29	- .57
QUESTIONS ONLY	2.3	1.4	8	2.8	1.3	8	.47	- .74
SELF-GENERATED Q's	2.0	.8	8	2.8	.7	8	.06	- .53
QAR	2.7	1.3	9	2.3	1.2	8	.50	.32
GUIDED READING	2.0	.8	9	2.1	1.0	8	.77	- .11
THREE-LEVEL GUIDES	2.9	1.2	8	2.9	1.6	8	1.00	.00
PATTERN GUIDES	3.2	1.8	6	3.9	.9	7	.49	- .36
ANTICIPATION GUIDES	2.1	.9	9	2.5	1.3	8	.49	- .36
KEYWORD CATEGORIZATION	2.9	1.4	8	3.3	1.1	7	.54	- .23
STRIP STORY	3.5	1.2	8	3.6	1.1	8	.83	- .09

* High scores on frequency represent infrequent reported use.

** Low experience = eight years or less; high = nine or more years.

*** Effect sizes were estimated by subtracting the second mean from the first, and dividing by the mid-point of the standard deviations.

only one strategy (Self-generated Questions). In addition, effect sizes can be considered large for only two strategies. Inasmuch as one could expect that one or two differences at the .10 level of significance would occur in this data set purely by chance, we concluded that the two groups do not differ regarding reported frequency of use of comprehension-improvement strategies.

As shown in Table II.8, respondents high and low in experience differed at the .10 level or better on reported effectiveness of use of three strategies (Self-generated Questions, Mapping, Webbing). Large effect sizes are apparent in all three cases. In addition, effect sizes can be considered large for another three strategies (Graphic Organizers, Pattern Guides, and Keyword Categorization). For all six strategies cited above, the more experienced group reported less effectiveness of use than did the low experience group.

Furthermore, effect sizes in the moderate range were present for another three strategies, again indicating relatively less reported effectiveness for the more experienced teachers. Thus, there is some evidence of a pattern in which our sample of IS 115 teachers with nine or more years of experience report less perceived effectiveness of comprehension-improvement strategies than do teachers with eight years or less experience. However, some of the comparisons involve very small numbers of respondents, and the pattern is not very reliable. Thus more research is needed to examine relationship between teacher experience and reported effectiveness of strategies.

Table II.8

Relationships Between Reported Effectiveness of Use* of Strategies and Years of Teaching

	Experience at IS 115**							
	Low			High				
Strategy	Eff. — X	S.D.	N	Eff. — X	S.D.	N	P	Effect Size***
K-W-L	1.8	.9	4	2.0	1.4	4	.78	- .17
GRAPHIC ORGANIZERS	1.5	.5	6	2.3	1.3	7	.18	- .89
TIME LINES	1.8	.4	5	2.1	1.0	8	.51	- .43
JOURNAL ENTRIES	1.3	.5	4	1.4	.5	7	.60	- .20
RE-TELLING	1.5	1.2	6	1.7	1.1	7	.75	- .17
DRTA	2.0	.8	4	1.7	.8	6	.54	.38
PREDICTION	1.6	.7	8	1.3	.5	7	.32	.50
MAPPING	1.4	.5	8	2.3	.7	8	.01	- 1.5
WEBBING	1.4	.5	8	2.3	.7	8	.01	- 1.5
QUESTIONS ONLY	1.6	.5	5	1.7	.5	7	.71	- .20
SELF-GENERATED Q's	1.5	.5	6	2.3	.7	8	.05	- 1.33
QAR	1.7	.8	6	2.1	1.0	8	.38	- .44
GUIDED READING	1.4	.5	7	1.9	1.0	8	.31	- .67
THREE-LEVEL GUIDES	1.5	.6	4	2.2	1.5	6	.42	- .67
PATTERN GUIDES	1.7	.6	3	2.8	1.0	4	.15	- 1.13
ANTICIPATION GUIDES	1.6	.5	7	2.0	1.2	7	.39	- .47
KEYWORD CATEGORIZATION	1.4	.5	5	2.0	.8	4	.23	- .92
STRIP STORY	1.8	.8	5	2.5	1.4	6	.35	- .67

* High scores on frequency represent low reported effectiveness.

** Low experience = eight years or less; high = nine or more.

*** Effect sizes were estimated by subtracting the second mean from the first, and dividing by the mid-point of the standard deviations.

Dissemination and Utilization of Comprehension-Improvement Strategies

As indicated in the preceding sections, staff development and related activities and emphases at IS 115 have focussed on dissemination of instructional strategies to help students improve in comprehension, thinking, and other aspects of higher-order, cognitive processing. Data from the questionnaire we administered to teachers indicate that participating faculty generally have found this staff development to be valuable and that they are making regular and, in their view, effective use of many of the strategies. Interviews and limited observations we conducted also supported the conclusion that comprehension-improvement strategies are being used by an increasing percentage of IS 115 faculty who view them as helpful in improving student performance. Related conclusions set forth below also were supported by our interviews, observations, and examination of documents describing recent developments at IS 115.

1. Introducing a wide variety of strategies has proven to be a useful approach that allows for and facilitates professional judgement and provides scope for appropriate selection and adaptation in the classroom. As exemplified in our listing of strategies shown in Tables II.2 through II.8, numerous comprehension-improvement strategies have been introduced in IS 115 staff development, in line with the design of the College Board Comprehension and Cognitive Instruction Program (CBCCIP). (The CBCCIP design provides for utilization of many strategies to be selected from a much larger set of possibilities.) In addition to strategies listed in the tables, IS 115 teachers identified several others which had been emphasized or, at least, examined in staff development, namely Cloze, Literature Logs, Brainstorming, and Cooperative Learning. Several teachers who were interviewed spontaneously stated that the opportunity to select a set of

strategies uniquely relevant or appropriate in terms of their own classroom situation has been a key strength of staff development at IS 115. In the words of one teacher, "I can pick and choose among the techniques that fit for my students, my materials, and my subject....I've acquired a 'menu' of strategies and resources that I can try out and see what works for me and my students".

2. Many of the strategies seemed particularly appropriate and useful for improving the performance of low achievers. Several teachers volunteered the opinion that, for one or another reason, certain strategies were particularly appropriate and/or potent in working with low achievers. For example, one teacher remarked that she had found that Re-telling had proven "non-threatening" for low readers. Other comments of this kind included the perception that Anticipation Guides had helped poor readers "understand the theme of a story", and that Prediction benefitted low achievers by providing "immediate feedback".

On the other hand, several IS 115 teachers stated that they had found comprehension-improvement strategies to be generally as effective for high-achieving as for low-achieving students. These respondents did not offer additional comments regarding differential potential applicability of specific strategies for differing groups of students.

3. Many of the strategies seemed particularly appropriate and useful for improving the performance of students with limited-English background and skills. As in the case of low readers cited above, several teachers spontaneously offered the perception that certain strategies had been particularly useful for students with limited-English background and skills. Among the examples and reasons they provided were Three-Level Guides and Anticipation Guides, which one teacher said had helped his ESL

students understand what they were studying, and Brainstorming, Prediction, and Journal Entries, which other teachers felt had facilitated general language development and usage (e.g. "elicited spoken language") among their limited-English students. Inasmuch as IS 115 enrolls a significant percentage of students whose native language is Spanish or other languages than English, suitability of strategies for this population has been an important consideration for faculty at the school.

4. Many faculty at IS 115 appreciated and benefitted from the opportunity and time to acquire awareness of strategies, try them out in the classroom, and learn how to implement them over an extended time period. This conclusion received support in most of the interviews, including one in which a teacher stated that at first she "didn't feel comfortable" with certain strategies, but grew more positive after she had learned more about them, prepared appropriate materials, and discovered how they worked in her classroom. Several teachers also stated that the chance to learn about and try many strategies during a period of two or three years enabled them to coordinate the use of various strategies and develop confidence in their capacity to implement strategies effectively.

5. Conducting workshops and other staff-development activities dealing with comprehension-improvement strategies over a period of years constituted a message that their utilization was becoming expected, normal practice at IS 115. Expressed by several observers knowledgeable about developments at IS 115, this conclusion is well in line with research indicating that leaders of unusually effective schools communicate schoolwide priorities and expectations through activities and goals that receive continuous attention and reiteration over a long period of time (Taylor, 1984; Levine and Lezotte, 1990). Along with numerous supporting

organizational actions such as appointment of a full-time Reading Resource Teacher-Staff Developer, focussing of the annual school plan on implementation of comprehension-improvement strategies, and provision of "coverage" by substitute teachers to facilitate faculty participation in strategy workshops, multi-year conduct of appropriate staff development in itself signalled emerging priorities for classroom instruction at IS 115.

6. Many of the comprehension-improvement strategies were viewed by faculty as being highly motivating for students and as generally improving students' engagement in learning. Among the strategies that faculty cited in this regard were: Prediction, which several teachers viewed as stimulating student interest in material to be studied; Strip Story, which encourages and, indeed, requires students' active participation in learning; and Graphic Organizers, Mapping, and Webbing, which several teachers felt are particularly useful in facilitating engagement through alternate learning styles. In addition, Journal Entries and other writing activities were cited as being particularly valuable in terms of stimulating students' interest and motivation.

7. Despite the various initiatives successfully undertaken to make staff-development time and opportunities available to teachers at IS 115, implementation of comprehension-improvement strategies has been and still is significantly hampered by limitations in the time and funds available for facilitating teachers' competence in acquiring and using strategies. Principal Ira Goldberg and other school leaders have been vigorous and creative in finding ways to make staff-development time and technical assistance available to IS 115 teachers willing to try new approaches for improving comprehension instruction. We seldom have encountered a school in which administrators have endeavored so successfully to modify

schedules, juggle faculty assignments, and otherwise find and coordinate time and other resources for purposes of staff and organizational development. Positive results seem to be occurring in terms of improved student performance.

However, even the heroic efforts that have been made to reform education through staff and organizational development at IS 115 are not necessarily sufficient when contrasted with the enormous magnitude of the tasks that must be accomplished. For example, our interviews and observations at IS 115, along with a decade of research on reform of teaching and learning in public schools, indicate that prerequisites for comprehensive improvement include the following:

- opportunities for teachers to learn about, practice, and master a multitudinous "repertoire" of teaching strategies to draw on in the classroom. Mastery of new approaches in turn depends on availability of appropriate resources to allow for demonstration and modeling of strategies in actual classrooms, considerable practice in using and adapting strategies, coaching and feedback regarding quality of implementation, and continuing information about possibilities for using and coordinating alternate strategies.
- collaborative planning and assessment of outcomes which allows participating teachers to share their experience and provide each other with advice on improving implementation, and also reinforces their motivation to succeed.
- considerable time for designing and/or redesigning instructional materials required for effective implementation of new instructional approaches. As regards comprehension-improvement strategies, such materials frequently include student study guides, outlines and "maps"

of text sections and other resource materials, and page-by-page revision of instructional materials currently in use.

Given that successful staff and organizational development requires so much time and energy from participating teachers, it was not surprising that those we interviewed at IS 115 appreciated what had been done to help them but in one way or another generally suggested that even more must be provided on an ongoing basis in the future. Examples included the respondent who recounted how her participation on the Leadership Team had drained her physical and mental resources (though not her enthusiasm), another teacher who described the substantial amounts of time required to prepare appropriate three-level guides and anticipation guides for groups of students at differing performance levels, and a third who pointed out that moving to the peer-coaching stage involves not just severe logistics problems but also difficult interpersonal situations and technical tasks. These interviews reinforced the rule-of-thumb we had developed after years of working with and observing school reform efforts, namely that in calculating resources needed for major reform, planners should calculate the maximum resources they believe will be needed, and then double that estimate.

Summary

Located in a low-income section of the Bronx, IS 115 enrolls nearly eight hundred students in grades six through eight. More than eighty percent of students are eligible for free or reduced-price lunch. The percentage of seventh graders at or above the fiftieth percentile in reading comprehension increased from 23 percent in the spring of 1988 to 41 percent in the spring of 1989. The comparable increase in the eighth grade

was from 28 percent to 37 percent. Major educational improvement efforts and programs at IS 115 have included the following:

- Project Basics. Conducted by the Center for Educational Leadership (CEL), Project Basics began at nineteen intermediate and high schools in 1985-86. Each participating school establishes a leadership team of eight-to-twelve teachers and administrators, and receives help from a staff developer one day a week. The Leadership Team at IS 115 has concentrated in part on designing and conducting workshops and on developing school goals and plans to improve student achievement.
- On-site personnel providing staff-and-organizational development. Persons who have contributed directly to site-level staff-and organizational development activities at IS 115 include: one full-time Reading Resource Teacher/Staff Developer; one Project Basics Staff Developer assigned one day a week; an Assistant Principal for Language Arts; faculty members serving on the Leadership Team; numerous nationally-known consultants who have conducted workshops dealing with comprehension-improvement strategies and other educational topics; and an English teacher trained in Writing Across the Curriculum.
- Staff Development Focussed on Comprehension-Improvement Strategies. As indicated above, many of the staff-development and related activities at IS 115 have focussed on instructional strategies for improving students' comprehension. During 1988 and 1989, emphasis shifted from reliance on outside consultants to utilization of internal resources, particularly with respect to demonstration, modelling, and coaching sessions planned and carried out by classroom teachers. Much of this activity has been made possible through

strong administrative leadership that facilitated faculty participation in staff development focussed on comprehension-improvement strategies.

- Salvadori Mini-School. Established in 1987-88, the Salvadori Mini-School enrolls approximately 160 at-risk seventh and eighth graders in classes with a maximum size of 22. Staff includes eight subject-area teachers with a common preparation period, two Technology teachers, an attendance facilitator, two "family workers", a guidance counselor, and a full-time director/teacher. Emphasis in curriculum is on urban planning and architecture.
- Productive Climate and Discipline. Efforts to improve climate and discipline have included utilization of consultants from the CEL, establishment of a Peer Leadership Team, participation in the Hispanic Research Center's "Hero-Heroine" program, conduct of classroom management workshops, facilitation of student-government activity, establishment of a "captive lunch" period, student preparation and dissemination of booklets dealing with the Bronx and with cultural diversity, introduction of comprehension-improvement strategies, the mini-school, and other educational innovations intended in part to make learning more meaningful and rewarding.
- Intensive Assistance for Low Achievers. Organizational patterns and practices that help provide intensive assistance for low achievers include employment of a full-time Reading Staff Developer, six reading teachers and six paraprofessionals, maintenance of an 8:1 student-teacher ratio in classes for low readers, a seventh-grade "Gates" class for retained students, and placement of low performing sixth graders in reading classes with two teachers.

In June of 1989 we administered a questionnaire which was returned by very few IS 115 teaches. Accordingly, we re-distributed the questionnaire the following fall and obtained responses from eighteen faculty. An analysis of responses from five teachers who had responded each time indicated that the questionnaire had good reliability.

The main part of the questionnaire asked respondents to designate the frequency with they used eighteen comprehension-improvement strategies and the extent to which they had found these strategies to be effective (see Tables II.2 and II.3). Respondents (to the second questionnaire) reported that they used many of the strategies frequently, particularly Re-telling, Prediction, Mapping, Webbing, Guided Reading, Anticipation Guides, Self-generated questions, QAR, and Questions Only. Strategies designated as most effective included Journal Entries, Prediction, Questions Only, Guided Reading, and Keyword Categorization, followed closely by DRTA, Mapping, Webbing, Anticipation Guides, K-W-L, Graphic Organizers, Self-generated Questions, QAR, Three-Level Guides, and Time Lines. The correlation between respondents' designations of frequency and effectiveness was .65.

Other conclusions from the questionnaire administered to IS 115 teachers included the following:

- among seventeen teachers who responded to the question "How frequently have you been able to make use of DRP scores in planning instruction?", only five responded "very often" or "often". However, several teachers reported taking other kinds of actions to improve the students/materials match.

- among seventeen teachers who responded to the question, "To what extent have you been able to match materials and students' DRP scores", only six responded "very much" or "somewhat"; the remainder selected "not very much" or "not at all".
- among sixteen teachers who responded to the question, "When (if) you have been able to match materials and students' DRP scores, how much has matching helped improve learning?", eleven selected either "very much" or "somewhat".
- respondents indicated they had attended an average of eleven training activities dealing with comprehension development. Sixteen of seventeen who responded reported that these activities had been "very valuable" or "valuable". Respondents who perceived the training activities as "very valuable" tended to report greater frequency of use and greater perceived effectiveness regarding comprehension-improvement strategies than did respondents who rated this training as less valuable.
- there were some indications that respondents with nine or more years of experience perceived some comprehension-improvement strategies as being less effective than did respondents with eight years experience or less, but small N's combined with inconsistent patterns prevent us from drawing firm conclusions regarding this possible relationship.

Conclusions we reached regarding dissemination and utilization of comprehension-improvment strategies at IS 115 included the following:

1. Introducing a wide variety of strategies has proven to be a useful approach that allows for and facilitates professional judgement and provides scope for appropriate selection and adaptation in the classroom.

2. Many of the strategies seemed particularly appropriate and useful for improving the performance of low achievers.

3. Many of the strategies seemed particularly appropriate and useful for improving the performance of students with limited-English background and skills.

4. Many faculty at IS 115 appreciated and benefitted from the opportunity and time to acquire awareness of strategies, try them out in the classroom, and learn how to implement them over an extended time period.

5. Conducting workshops and other staff-development activities dealing with comprehension-improvement strategies over a period of years constituted a message that their utilization was becoming expected, normal practice at IS 115.

6. Many of the comprehension-improvement strategies were viewed by faculty as being highly motivating for students and as generally improving students' engagement in learning.

7. Despite the various initiatives successfully undertaken to make staff-development time and opportunities available to teachers at IS 115, implementation of comprehension-improvement strategies has been and still is significantly hampered by limitations in the time and funds available for facilitating teachers' competence in acquiring and using strategies.

III. APOPKA SENIOR HIGH SCHOOL, ORANGE COUNTY (ORLANDO)

Apopka Senior High School is located in a suburban area north of the City of Orlando in Orange County, Florida. Apopka is a typical comprehensive high school in the sense that it enrolls a wide diversity of students at differing levels of achievement and motivation. Enrollment during the fall of 1989 was approximately 2,500 students from grades nine through twelve. Approximately 66 percent of enrollment was non-Hispanic white, 27 percent was African American, six percent was Hispanic, and the remaining one percent was classified in Asian, Native American, and other smaller racial/ethnic subgroups. The administration includes four assistant principals and a dean of students.

Reading Comprehension Performance

Impressive success appears to have been registered in improving Apopka students' reading-comprehension performance as measured by the Degrees of Reading Power Test. As indicated in Table III.1, average DRP scores of students proceeding through the second half of the ninth and the first half of the tenth grade increased by 12.4 DRP points in the 1986-to-87 period, by 7.2 points in the 1987-to-1988 period, and by 5.5 points in the 1988-to-1989 period.* For these groups of students, the test administered near the mid-point in the ninth grade and a tenth-grade test one year later represent their first full year at Apopka for which DRP data are available to assess comprehension performance.

Similarly, performance gains calculated from near the end of the fall semester in the ninth grade to approximately the end of the fall semester in the twelfth grade indicate the extent of progress registered during a three-year period as students move from freshman to senior status. Gains for 1989, 1990 and 1991 seniors during these respective three-year periods were as follows:

1989 seniors -. 15.5 (66.9, 9th gr., not shown in Table III.1; 82.4, 12th gr.)

1990 seniors - 16.3 (66.4, 9th gr.; 82.7, 12th gr.)

1991 seniors - 16.8 (63.0, 8th gr.; 79.8, 11th gr.)

Further examination of the data in Table III.1 draws attention to several underlying patterns and considerations regarding DRP achievement at Apopka High School since 1986.

*Several knowledgeable observers believe that one of the major reasons for the decline in gains after 1986-87 involves recent increases in the number of tests that Apopka is required to administer, thereby demotivating some students who say and/or act as if they are "tested out". In addition, students entered the ninth and tenth grades after 1986-87 with higher average scores than their predecessors.

1. Average entering scores (attained during the eighth-grade) for

Apopka ninth-graders have varied within a relatively narrow range from 63.0

Table III.1

Average DRP Scores for Apopka Students, February, 1986 to February 1987
Through November, 1988 to November, 1989

A. All Students Present for Pre-and Post-Testing

Grade	1986-87				1987-88				1988-89			
	Feb. 1986	Feb. 1987	Diff	N	Nov. 1987	Nov. 1988	Diff	N	Nov. 1988	Nov. 1989	Diff	N
11/12	NA	NA	NA	NA	79.2	82.4	3.2	346	79.7	82.7	3.0	327
10/11	74.3	78.6	4.3	340	80.1	79.3	-.8	369	79.3	79.8	.5	333
9/10	66.4	78.8	12.4	397	68.5	77.7	7.2	403	69.0	74.5	5.5	377
8/09	63.0	69.4	6.4	334	65.7	68.4	2.7	296	64.3	67.8	3.5	348

B. Students with Pre-test Scores 56 and Below

	1986-87				1987-88				1988-89			
	Feb. 1986	Feb. 1987	Diff	N	Nov. 1987	Nov. 1988	Diff	N	Nov. 1988	Nov. 1989	Diff	N
11/12	NA	NA	NA	NA	50.2	60.4	10.2	28	50.2	55.5	5.3	21
10/11	50.1	54.8	4.7	33	49.3	58.6	9.3	13	50.0	54.7	4.7	31
9/10	49.8	65.8	16.0	73	48.4	59.1	10.7	71	50.4	57.9	7.5	59
8/09	46.0	56.2	10.2	100	50.1	55.8	5.7	77	48.1	55.6	7.5	100

C. Students Eligible for Subsidized Lunch

	1986-87				1987-88				1988-89			
	Feb. 1986	Feb. 1987	Diff	N	Nov. 1987	Nov. 1988	Diff	N	Nov. 1988	Nov. 1989	Diff	N
11/12	NA	NA	NA	NA	NA	NA	NA	NA	72.8	77.7	4.9	37
10/11	NA	NA	NA	NA	74.6	72.8	-1.8	37	71.3	70.5	- .8	44
9/10	59.9	72.3	12.3	30	59.3	67.3	8.0	48	61.3	66.6	5.3	49
8/09	51.6	58.6	7.0	38	60.1	61.1	1.0	49	57.7	62.8	5.1	43

D. All African American Students Present for Pre-and Post-Testing

Grade	1986-87				1987-88				1988-89			
	Feb. 1986	Feb. 1987	Diff	N	Nov. 1987	Nov. 1988	Diff	N	Nov. 1988	Nov. 1989	Diff	N
11/12	NA	NA	NA	NA	69.8	71.6	1.8	59	72.6	76.6	4.0	83
10/11	64.5	69.2	4.7	52	74.1	71.9	-2.2	79	72.0	72.7	.7	100
9/10	59.3	73.4	14.1	75	61.9	70.0	8.1	110	63.4	68.4	5.0	102
8/09	54.5	61.8	7.3	107	60.6	63.2	2.6	100	54.6	59.3	4.7	96

to 65.7. The unweighted average for the three scores shown in Table III. 1 is 64.3.

2. Average scores in the middle of the tenth grade have varied within a range from 74.3 to 80.1. The unweighted average for the six scores shown in Table III.1 is 77.5. Thus the average gain from the eighth grade to the tenth grade is 13.2. According to national norms published by the College Board, this difference represents more than four years of achievement gain.

3. Subsequent rates of growth in DRP performance "level off" during the remainder of the tenth grade and the eleventh and twelfth grades. Thus the average score in the middle of the twelfth grade is 82.5 (weighted average of the 82.4 and 82.7 scores), an increase of only five points from the 77.5 average we calculated for the middle of the tenth grade.

Decline in Apopka students' rate of gain on the DRP after the middle of the tenth grade certainly is due in part to ceiling effects on the test, which has a maximum score of 99. These effects are shown in Figure III.1, which portrays the February, 1986 scores on the vertical axis and the November, 1989 scores on the horizontal axis for the 280 1990 seniors for whom data were collected. As indicated in the plot, 59 of these 280 students (21%) had maximum scores in November, 1989. Fifty-two of these 59 students already had scores of 99 in November, 1988. Had they not reached this ceiling, both the 1986-to-1989 average gain and the 1988-to-1989 gain would have been discernibly greater.

Partly for this reason, we view the relatively low average gain of five points after the middle of the tenth grade as much less important than the fact that the average scores during and after the tenth grade are close to eighty. In our opinion, this pattern probably means that a large majority of Apopka's juniors and seniors have acquired sufficient comprehension

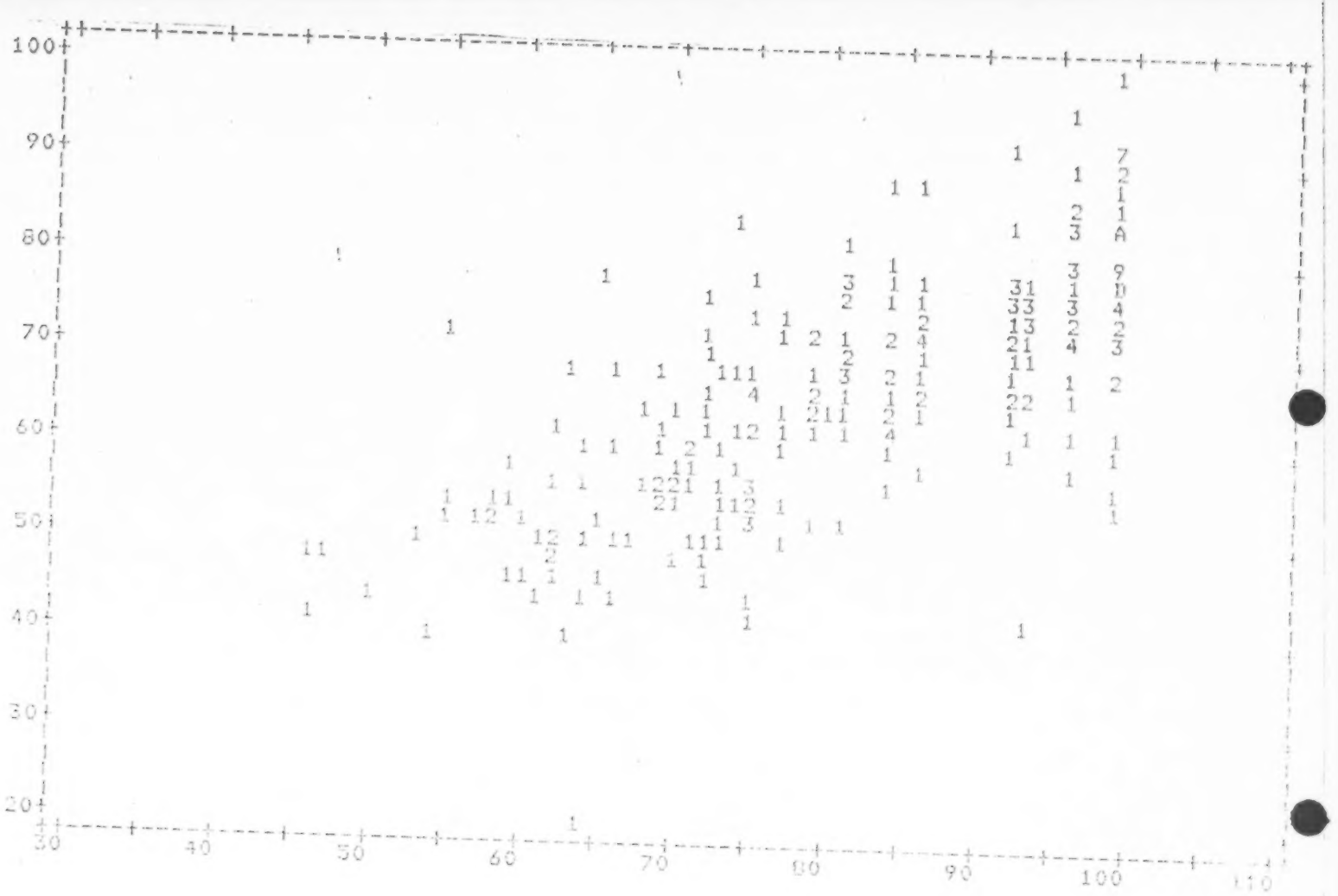

Figure 1.

February 1986 DRP Scores (Vertical Axis) Plotted Againist November, 1989 DRP Scores (Horizontal Axis) for 1990 Seniors, N = 280

capability to function successfully in their various classes and programs of study.

4. Rates of gain among ninth-and tenth-graders during the 1988-89 and 1989-90 school years appear to be somewhat smaller than in 1987-88. In particular, the gain for students moving from the ninth to the tenth grade in 1988 and 1989 was only 5.5 points, compared to 7.2 and 12.4, respectively, for the two preceding cohorts. This decline left tenth graders in November, 1989 with an average DRP score of only 74.5, compared with 77.7 and 78.8, respectively, for the two preceding groups of tenth graders. Recent decline in DRP gain during the crucial sophomore year may be due to expansion in the testing program at Apopka, which now includes additional substantial testing for sophomores in October. The overall testing program may well be resulting in a "tested-out" reaction and concomitant demotivation as regards the November DRP test.*

5. Apopka students with pre-test DRP scores of 56 or less during any given comparison period generally make excellent progress during the following chronological year. As shown in Part B of Table III.1, the range of gain scores among such cohorts during the past three years is from 4.7 to 16.0, with an overall unweighted average (not shown in the table) of 8.3. Inasmuch as College Board national norms indicate that the average secondary student typically gains two or three points during an academic year, a gain of 8.3 for students who start relatively low in comprehension appears to be an impressive achievement, even after taking account of the likelihood that a significant part of this gain represents regression to the mean.

*Telephone interview with Joyce Clark, January 22, 1990.

Additional information about the subsequent performance of students who enter Apopka with relatively low comprehension scores can be obtained by calculating their gains across more than one additional year. Our calculations of these patterns (not shown in Table III.1) revealed the following patterns:

- among 47 1985-86 ninth-graders who had DRP scores of 56 or below and were in the 1989 senior class three years later, the average 1986 score was 50.4 and the average 1989 score was 65.9.
- among sixty 1986-1987 ninth-graders who had entering DRP scores of 56 or below and are in the senior class in 1989-1990, the average pre-test score was 49.5 and the average 1989 score was 67.5.
- among 72 1987-1988 ninth-graders who had entering DRP scores of 56 or below and are in the junior class in 1989-1990, the average pre-test score was 47.1 and the average 1989 score is 68.1.

The preceding patterns indicate that as a group, students who are entering Apopka with DRP scores below 57 are registering an (unweighted) average gain of 18.2 points during the subsequent three-to- four years---far beyond what might reasonably be attributed to regression to the mean. In addition, extensive additional examination of the data failed to provide indications that students who had low comprehension scores and were not tested three or four years later had clearly lower gains during the following one or two years than did their counterparts who were tested at the later time period.

The impressive gains being made by students who enter Apopka with relatively low comprehension scores also are apparent when one examines a plot of their DRP scores for different time periods. For example, Figure III.2 shows the November, 1987 and November, 1989 scores for 1989-1990

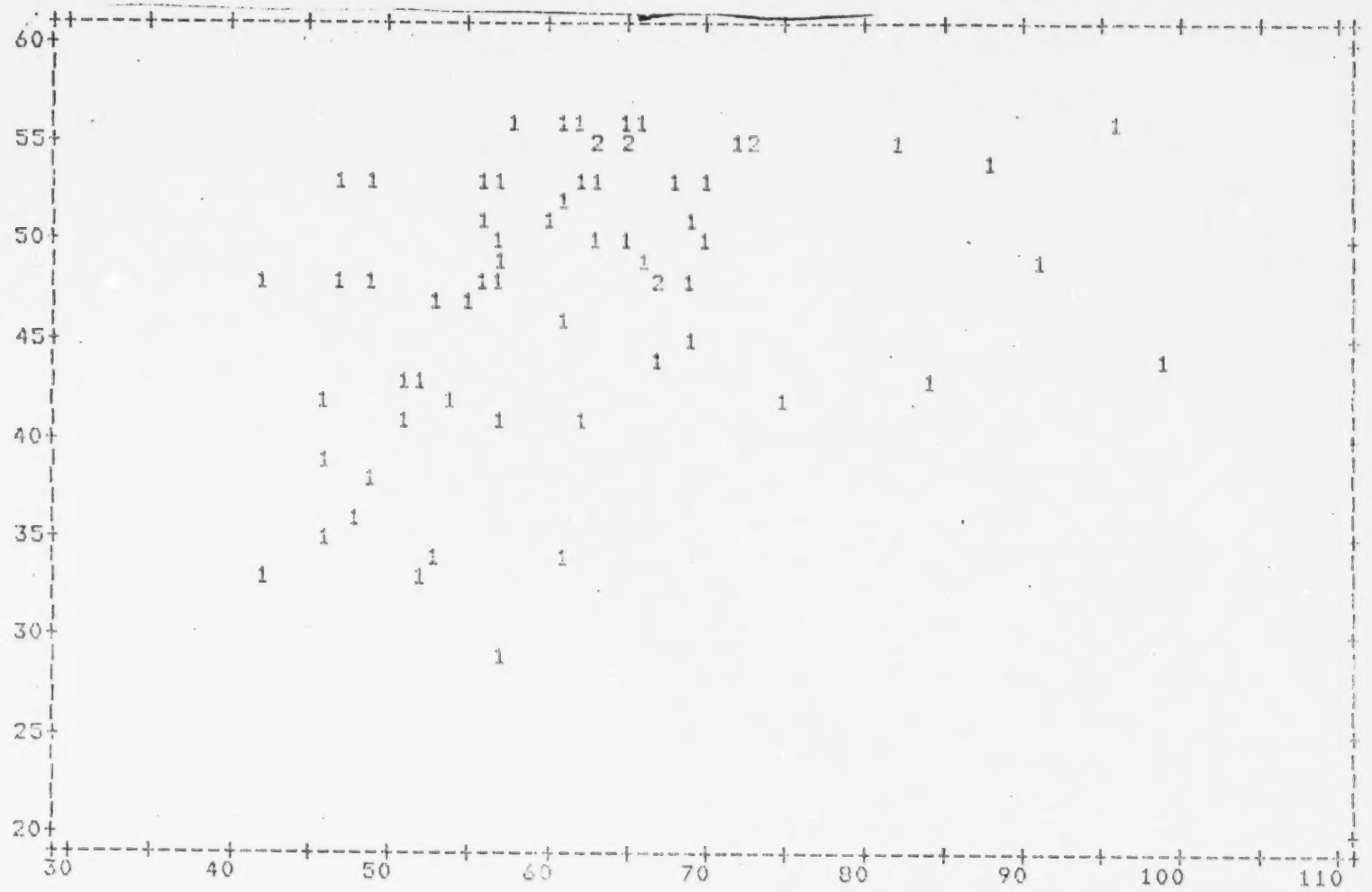

Figure 2.

November 1987 DRP Scores (Vertical Axis) Plotted Againist November, 1989 DRP Scores (Horizontal Axis) for 1990 Juniors with Scores Below 57 in 1987, N = 66

juniors who had scores below 57 in 1987. As is apparent in the plot, most of the 66 students whose scores were utilized made substantial gains in comprehension performance. The average gain (from 47.8 to 61.9) was 14.1 points-approximately three years of growth during the two-year period, even though this group of students constituted approximately the bottom fourth of their class in initial achievement. (In contrast to higher-performing students, no student reached a score of 99 and thus no ceiling was encountered.) We also plotted the gains for these 66 students against their initial scores. As shown in Figure III.3, students who started low did not have obviously larger gains than those whose initial scores were close to 56. In addition, analysis conducted without the six students whose gains exceeded two standard deviations and who scored above eighty in 1989 indicated that the average gain still exceeded eleven points (from 47.5 to 59.1). These pattern suggests that regression to the mean is not an overriding consideration in explaining the large amount of progress that was registered for the group as a whole.

6. Apopka students who came from low-income families and were eligible for subsidized lunch have registered DRP gains generally comparable to the student body as a whole. As shown in Part C of Table III.1, average year-to-year gains among the relatively small number of lunch-eligible students at Apopka have all been within two points of average gains for the cohorts in which they participate. In addition, the 37 lunch-eligible 1990 seniors who had both 1988 and 1989 scores had an average 1989 score of 77.7-only five points less than that for the 327 students in the senior class in which they participate. (However, removing the 37 produces an average of 83.3 for the remaining 290 students.) On the other hand, Part C of Table III.1 also shows that students eligible for subsidized lunch generally are eight-to-ten

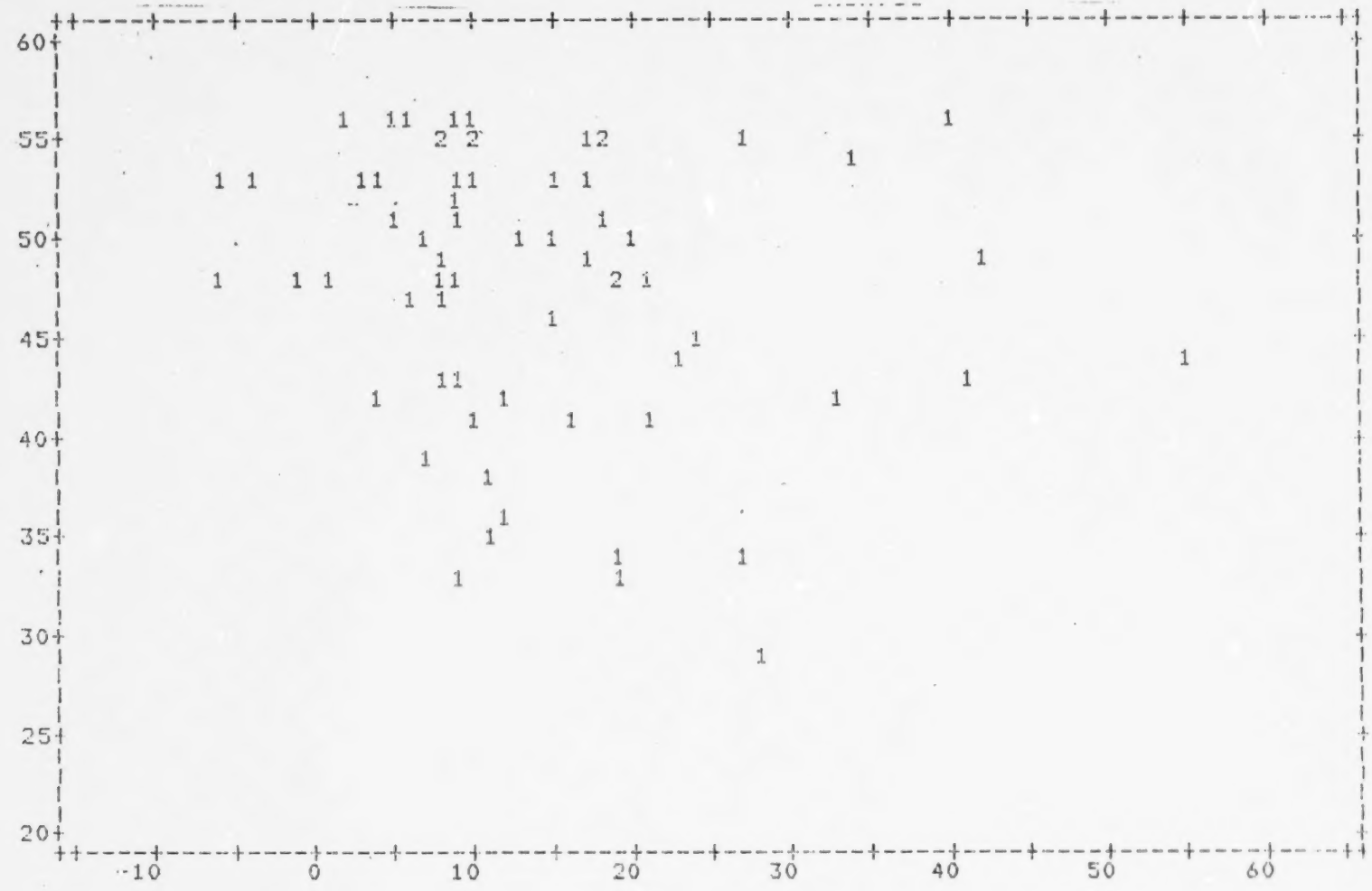

Figure 3.

November 1987 Scores (Vertical Axis)Plotted Againist 1987 to 1989
DRP Gain Scores (Horizontal Axis) for 1990 Juniors with
Scores below 57 in 1987 (N = 66)

points behind their peers in most comparisons. Thus we conclude that Apopka faculty have made an excellent start toward improving the comprehension performance of students from low-income families, but more must be done to attain parity.

7. Gains of African American students attending Apopka High School have been similar to those of non-Hispanic white students.* As shown in Parts A and D of Table III.1, changes in DRP scores of black students during the approximately one-year testing intervals generally have been within one or two points of the comparable data for the larger, mostly-white cohorts in which they participate. In addition, it is somewhat encouraging to find that 1990 black seniors made excellent progress (4.0 points) compared to white students (2.7 points, not shown in Table III.1) during the most recent testing period,** and registered an average score of nearly 77 in November 1989.

However, the average scores of black students also are about seven to twelve DRP points below those of white students (not shown separately in Table III.1) when comparisons are made for a given grade-level and testing date. Thus African American students appear to be making excellent progress at Apopka but more must be done to reduce and eliminate racial disparities in comprehension performance.

We also calculated average scores separately for African American students who have and have not been classified as eligible for subsidized

*Too few Hispanic, Asian, or "other" students have been enrolled and tested to allow for further separate analysis by ethnicity.

**Some of this difference is attributable to a greater ceiling effect for white students.

lunch. (Depending on the year and grade, thirty-to-forty percent of black students at Apopka have been lunch-eligible.) The results (not shown in Table III.1) indicated that in most of the comparisons, the group of lower-income (i.e. lunch-eligible) black students had average DRP scores three to six points lower than black students not classified as eligible for subsidized lunch. This pattern also reflects the fact that the latter group generally had DRP scores four to six points lower than those of white students.

Educational Improvement Programs at Apopka

Teachers and administrators have been working in many ways to improve instruction and other aspects of education at Apopka High School. Numerous new and modified approaches and programs have been introduced, and faculty have received considerable recognition for their dedicated efforts to improve educational opportunities for Apopka students.* We cannot in this paper review or even enumerate most of the many innovative and admirable efforts to enhance education that are underway at Apopka. Instead, we will provide brief descriptions of several of the activities and programs which our visits to Apopka and examination of school documents suggested may be most important in terms of the school's overall goals and thrust, particularly with respect to improvement of students' comprehension performance.

Degrees of Reading Power Program. The Degrees of Reading Power (DRP) Approach suggested by the College Board was introduced at Orange County secondary schools in 1985. As described by Joy Monahan, Orange County Public Schools Program Consultant for Middle and Secondary Reading, the DRP approach has been helpful in "determining how closely" text-difficulty levels match students' current comprehension performance, so that "the difference between the two" can be "compensated for" through the use of comprehension-improvement strategies (Monahan, 1988:1). Early steps in implementation as enumerated by Monahan included the following:

- Full day orientation by the College Board for understanding the DRP and how to use it.

* For example, Albert W. Helms, principal from 1985 to 1989, was a finalist in the Phi Delta Kappa Educator of the Year competition in 1987-88 and 1988-89, and in 1988 was one of 52 principals cited nationally for outstanding leadership in a competition co-sponsored by the NASSP and the CCSSO. Apopka High School was given School of Merit awards from the U.S. Department of Education in 1988 and 1989, and twice has won Florida Secondary Education awards.

° Use of pre and post testing by RRS [Reading Resource Specialist-see below], using results to match the student's comprehension ability with instructional materials used in content area classrooms.
° Periodic sessions of RRS to update on use of DRP and to share ideas on strategies to use to better match students to texts.
° Calculating of DRP readability units on textbooks and instructional materials used in content area classrooms.
° Session added to districtwide reading course, Reading in the Content Area (RICA), which is devoted to understanding and implementing the results of the DRP information [Monahan, 1988:1]

Implementation of and elaboration on the DRP approach at Apopka has involved systematic application in terms of major aspects of instructional and organizational arrangements. In addition to provision of continuous staff development, assignment of a Reading Resource Specialist, and other actions which will be described separately below, Apopka administrators and teachers have modified arrangements for assigning students to classes, for selecting instructional materials, and for supervising instructional practices with reference to the DRP approach.

As regards assignment of students to classes, placement is determined to a significant extent using the following criteria (in terms of students' DRP scores):*

	9th Grade	10th Grade	11th Grade	12th Grade
Advanced Classes	75 or higher	80 or higher	85 or higher	90 or higher
Regular Classes	55 - 74	60 - 79	65 - 84	70 - 89
Developmental Classes	Below 55	Below 60	Below 65	Below 70

Apopka faculty we interviewed indicated that emphasis on DRP scores in assigning students to classes had proven productive and beneficial because

*Criteria shown were used in 1988 and 1989. Criteria for advanced-class placement before 1988 were five points lower. Students' grade-point-averages, teachers' judgements and recommendations, and data from standardized and criterion-referenced tests also are used in making placement decisions.

doing so helps in aligning instructional materials with student performance levels, and because DRP scores have proven much easier for parents, teachers, and students to understand than standardized test scores that had been emphasized previously. In the words of one counselor, " the DRP revolutionized our ability to place students more accurately. Previously we never really understood the fourth and sixth borderline stanines on the standardized tests".* "Once we can place students correctly, it is easier to avoid going along with kids who want easy classes, and this also helps us identify students who need more counseling for an extra push. And because the DRP is easier to understand, we get better success in asking teachers to discuss placement issues with their students".*

As regards selection of instructional materials, Apopka faculty are making extensive and systematic use of DRP scores in selecting materials suitable for particular groups of students in many classes throughout the school. This has been accomplished in part by: 1) utilizing College-Board publications which provide scores for hundreds of textbooks and other sources; 2) scoring materials on site with an Apple IIe computer; 3) participating in a district network through which Reading Resource Specialists and other educators share ratings and other information about materials, and 4) providing faculty with continuing training in how to obtain and utilize DRP scores in order to match materials and students.

As regards supervision of instructional practice, school officials reported that coordinated schoolwide emphasis on comprehension-improvement strategies had enabled them to attain more coherence in the overall operation of their educational programs and approaches. Illustrations included the following:

*Interviews with counselors, assistant principals, and teachers, December 5, 1988.

- Given the availability of systematic staff development dealing with comprehension-improvement strategies, lessons plans are examined more meaningfully and feasibly to identify teachers who can benefit most from appropriate additional assistance on how to participate in the DRP approach. One "twist" in the lesson-planning process developed at Apopka is that teachers are now asked to submit plans monthly, showing what they have emphasized in the preceding three weeks and what they plan to focus on the following week.
- Department chairpersons are more intimately involved in the improvement process because they have a common, publicly-identified focus (i.e., comprehension strategies) on which to concentrate their efforts.

Reading Resource Specialist. As at other intermediate and secondary schools in the Orange County district, a full-time Reading Resource Specialist (RRS) has been assigned to Apopka High School since October 1983. The role and functioning of the RRS, defined and partly financed in accordance with Florida statute and legislative allocations, have been described by Monahan (1988:1-2) as follows:

* Provides guidance and strength for making students' learning more meaningful and increases students' chances for successful achievement through:
  - promoting a comprehensive reading program
  - supporting existing basic skills remediation program
  - assisting with diagnosing and prescribing learning strategies using the DRP information
  - assisting and managing reading skills and learning strategies in all content areas
  - providing reading inservice training for the school staff
  - participating in a team teaching effort with classroom teachers
  - interpreting the reading program for parents and community

* The RRS participated in full-day staff development sessions approximately twice a month during the initial year of implementation.
  - role interpretation

° district resources available, material and human
° research and what it says to reading
° testing and assessment
° computers and reading
° promoting recreational reading
° effecting change through leadership
  - leadership techniques
  - human relations skills
  - public relations expertise
  - communication skills
  - decision making competence

* Participates in full-day ongoing staff development sessions as needed.

* Encourages Classroom Action Research [see below] to promote teacher ownership for using specific content reading-learning-thinking strategies found to be productive for increased achievement.

* Assists in developing and implementing content reading-learning-thinking strategies [see below] containing sound practices to help bring the student and the content area text closer to the desired match. The amount of disparity between the student and the assigned text is determined by the DRP measures, using the DRP test for the student and the MicRA-DRP computer software or The College Readability Guide for textbook ratings.

* Creates a support network between RRS in a districtwide camaraderie for:
  ° sharing ideas and the common bond of problems and solutions
  ° sharing materials developed to accompany commonly used textbooks, i.e., structured overviews, vocabulary reinforcement exercises, chapter mapping ideas, analogies, feature analysis ideas, possible sentences, or other successful efforts
  ° demonstrating content area reading-learning-thinking strategies (presenting to peers reinforces professional growth)
  ° writing proposals and presenting at reading conferences and to other school districts.

* Demonstrates the use of computers to assist teachers. Each RRS has an Apple IIe and printer.

* Teams with content teachers by demonstrating, modeling, coaching, and evaluating a process/strategy until the content teacher reaches a comfort level to continue with the implementation of the strategy.

* Establishes a reading committee to promote activities that support the work of the RRS and to help set goals.

* Develop publicity ideas to sell the reading effort and inform teachers, administrators, students, parents, and the community. Newsletters, flyers, posters, summary reports, test data, inservice schedules, graphs and charts are examples of vehicles used for publicity.

* Establish a recreational reading emphasis for the school through ideas such as silent sustained reading, book fairs, trade-a-book day, promotional posters, bumper stickers, door decoration contests, guest readers, and recognitions/awards sessions.
* Promotes the use of cooperative learning groups in content area classrooms.

Elsewhere, Monahan (1987:677) has described the role and functioning of the Reading Resource Teacher at Apopka and other Orange County high schools as involving provision of

> ...inservice in the new concepts of reading instruction during class periods of the school day. To accomplish this, the reading teacher develops a 50 minute workshop on a way to model the teaching of, for example, inferencing or graphic organizers.
>
> The workshop is repeated hourly. Participating teachers learn about graphic organizers in the workshop during their planning period.
>
> The reading teacher or the curriculum leader of the school follows up with graphic organizer demonstrations to students in classrooms, using their text materials. Coaching and feedback are provided as needed.

Staff Development Focussed on Comprehension-Improvement Strategies. As is apparent in the preceding descriptions of the Degrees of Reading Power approach and functioning of the Reading Resource Specialist, staff development focussed on introduction and implementation of comprehension-improvement strategies constitutes a central core of Apopka's schoolwide efforts to improve educational opportunities for students. A general description of the overall purpose of this effort has been provided by Monahan (198:677-678) as follows:

> Teachers are urged to employ...[comprehension-improvement] strategies before, during, and after the unit of study or lesson. By internalizing ideas of how, why, and when to use specific strategies, content teachers can do a great job of synthesizing and using...[research findings] in their classrooms...
>
> Teachers now become mediators or helpers. They provide the scaffolding to assist the learner, gradually releasing the responsibility to the student for assuming executive control of her/his own thinking and learning while reading. Students at the executive control stage are able to carry out by themselves what they needed assistance and guidance to accomplish initially.
>
> As more and more classrooms develop a comfort level in using strategies, teachers can do interclass visitation to see exemplary

strategy teaching happening in other disciplines in their own building. The real power comes when students receive strategy instruction in content area application as they more from class to class during the day.

At Apopka, on-going staff development conducted by Reading Resource Specialist Joyce Clark is provided across seven class periods on Tuesdays throughout the academic year. Tuesday training sessions, which are referred to as Interdisciplinary Teaming or as Interdisciplinary Workshops, generally deal with comprehension-improvement strategies, selection and use of instructional materials appropriate for students' current comprehension levels, and other topics related to implementation of the Degrees of Reading Power Program. Classroom management, effective teaching practices, student learning styles, and various other instructional topics also have served as themes for Tuesday workshops. Teachers are encouraged to attend during "free" periods, and arrangements frequently are made to relieve them of other responsibilities in order to facilitate their participation. Clark then arranges for follow-up demonstration, coaching, and modelling activities in individual classrooms.

In-service credit is provided for participants, and teachers new to Apopka are expected and assisted to attend Interdisciplinary Workshop training. A brochure (Clark, n.d.) disseminated in the Apopka community describes the Interdisciplinary Team approach as a "year-long staff development program... [that aims to help faculty] gain the expertise to assess and design classroom activities in order to bridge the gap between student reading ability and readability of required instructional materials. Initially [1984-85], 23 teachers voluntarily agreed to participate....By the end of this program's fourth year, 84 faculty members were active participants".

In addition, RRS Clark works with other school and district staff to facilitate faculty participation in other relevant training activities including district in-service courses and conferences, regional conferences, and enrollment in appropriate college and university courses.

Staff development at Apopka and other Orange County schools explicitly provides for introduction of a multitude of comprehension-improvement strategies. Following a philosophical approach developed by secondary reading consultant Joy Monahan as well as College-Board developers of the Degrees of Reading Power program, this approach is built on the presupposition that teachers should function as professionals who acquire a wide repetoire of strategies and then select and implement those that are most appropriate in terms of students and teachers' styles and problems, the skills, materials, and objectives to be learned, and other considerations bearing on the design and implementation of effective lessons. Many of the comprehension-improvement strategies that have been emphasized in Apopka staff development are shown in Table III.2, which is adapted from introductory materials used in interdisciplinary workships in the fall of 1988.

Orange County District-Level Services and Networking. As mentioned above, direct assistance and other services provided by the Orange County Public Schools central office have played a central part in initiating and implementing comprehension-improvement activities at Apopka High School. Provided for the most part through the office of the Program Consultant for Middle and Secondary Reading (Joy Monahan), supportive services and activities have included the following:

- appointment of the Reading Resource Specialist (RRS).

Table III.2

"Intervention" Strategies* Listed in Introductory Interdisciplinary Workshop Materials, Fall 1988

Prereading

1. Frayer Model
2. Graphic Organizers
3. List-Group-Label
4. Possible Sentences
5. Semantic Feature Analysis
6. Semantic Mapping
7. Anticipation Guide
8. Directed Reading-Thinking Activity
9. Prediction
10. SQ3R (Study/Questions/Read/Review/Recite)
11. Think Aloud

Study Skills

1. Graphic Organizers
   a. Cause/effect
   b. Comparison/contrast
   c. Time order
   d. Simple listing
   e. Problem/solution
   f. Bulletin board
   g. Chalkboard diagram, etc.
2. Cornell Notetaking
3. One-Sentence Summary
4. Pyramid Diagram
5. Story/Chapter Mapping
6. Framed Paragraphs

Comprehension

1. Anticipation Guide
2. Directed Reading-Thinking Activity
3. Guided Reading Procedure (GRP)
4. Prediction
5. Questions/Answer/Relationships (QAR)
6. Reciprocal Teaching
7. ReQuest
8. SQ3R (Study/Question/Read/Review/Recite)
9. Think Aloud

Vocabulary

1. Analogies
2. Cloze Procedure
3. Frayer Model
4. Graphic Organizers
5. List-Group-Label
6. Possible Sentences
7. Semantic Feature Analysis
8. Semantic Mapping

* Some other OCPS publications refer to comprehension-improvement strategies as "Content Area Reading-Learning-Thinking" Strategies and "Content Area Reading Learning" strategies.
A glossary describing each strategy is provided in Appendix A.

- networking with RRS staff at other schools. One particularly good example of relevant and productive networking activities in the OCPS occurred when ten teachers met for 22 days in 1984 and prepared detailed analysis with instructions for using fifteen comprehension-improvement strategies. The resulting Intervention Strategies Kit published in 1985 has been used by Reading Resource Specialists in planning and conducting staff development, in conjunction with a sizable Handbook containing a variety of materials dealing with instructional improvement.
- conduct of district conferences dealing with secondary reading.
- provision of technical assistance from regional and national consultants.
- provision of newsletters, journal articles, research reports, and other documents involving the use of comprehension-improvement strategies.
- training for Reading Resource Specialists.
- assistance in obtaining small grants to provide stipends for teachers participating in Interdisciplinary Workshops and related activities.
- assistance in organizing and conducting "recreational" reading activities for students.
- conduct of in-service programs on secondary reading for principals, assistant principals, counselors, and other school leaders.
- coordination with district specialists in social studies and other academic fields.
- coordination between central office and school-level administrators.
- assistance to school-level leaders in developing annual plans for improving student performance.

- sponsorship of courses on Reading in the Content Areas (RICA). Initiated in the mid-1970's partly in response to a state mandate requiring that secondary teachers complete a reading course in order to extend their certificates, RICA courses each provide one-fourth of the required 120 points for extension through inservice training. Regularly offered since that time through the secondary-school reading office, RICA courses in recent years have concentrated on topics that include the following themes (Monahan, 1988): "importance of direct instruction in strategies to help students become independent learners"; "readability and use of DRP"; "text organization and text inconsiderateness"; "direct vocabulary instruction"; "levels of questioning"; and "content area reading- learning-thinking strategies".

Classroom Action Research. Conduct of Interdisciplinary Workshops and related staff-development activities at Apopka High School and other OCPS secondary schools has consistently stressed development and use of "Classroom Action Research" as a means for motivating and assisting teachers and students in introducing comprehension-improvement strategies to enhance academic performance. Secondary Program Consultant Joy Monahan (1987:678) has described Classroom Action Research as follows:

> Here's how it works. Suppose a teacher has learned how to use graphic organizers with the geography text. To do some homespun research-we call it action research-the graphic organizers are used only with the second period class and not the rest of the day. In the research, students are not matched by IQ or any method other than the fact that they are in the second period class. During the rest of the day, the regular teaching approach is used in all classes, which are the control classes.
>
> Pre-and posttesting is used, with the same test for experimental and control classes. The evidence from the graphic organizer class is charted on a bar graph. Each of the other classes has a bar graph, so comparison is easy.
>
> The strategy classes always become winners. Visual display through the bar graphs provides evidence of the positive effectiveness of using a learning strategy. Students like to see the

graphs, as do principals. Teachers take ownership for the strategy usage through the results of classroom action research.

Classroom action research provides verification as teachers collect data from their classroom settings and prove to themselves and others, including the students who become great allies in this activity, that the strategy they are trying is making a difference. As a result content area teachers assume ownership and enhance their teaching practices. Students become the beneficiaries as their achievement improves.

Additional Activities and Programs Supporting Improved Comprehension. Like other large, comprehensive high schools, Apopka conducts a wide variety of activities and programs that can be viewed as contributing in one way or another to the development of students' comprehension skills. An outstanding high school like Apopka sponsors and implements an even wider variety of such activities than does the typical high school. Among the many approaches which we believe fit this description at Apopka are the following:

- implementation in 1987 of Project Success, a special ninth--grade program for potential dropouts and "reluctant" learners.* Teachers who volunteered to work with Project Success students agreed to emphasize comprehension-improvement strategies and received considerable training and other assistance to facilitate their doing so. In conjunction with Project Success, Apopka has conducted a three-week Summer Transitional Enrichment Program (STEP) for students whose eighth-grade DRP scores were below 55 or exemplified other characteristics indicating eligibility for enrollment in Project Success. For 1989-90, Project Success was converted to a more

*Interview with Joyce Clark, December 5, 1988.

systematic school-within-a-school approach called STAR (i.e., the Student At-Risk Program).*

- provision of tutoring opportunities after school for students with problems in reading and other subjects.
- encouragement of student writing in all classes and disciplines, through implementation of the Writing Enhancement Program (WEP).
- between 1985 and 1989, conduct of a school-wide "silent reading" program each Wednesday, in cooperation with Burger King.
- encouragement for and assistance to teachers willing to use Student Team Learning and other cooperative learning approaches, which have received considerable emphasis in Tuesday Interdisciplinary Workshop sessions and other staff development activities.
- limitation of English teachers' daily load to four classes with a maximum class size of 25 each, together with elimination of their non-teaching "duty" responsibilities. This state-wide initiative in Florida obviously makes it much more feasible than otherwise for English teachers to acquire and use strategies designed to improve students' comprehension.
- use of certificates, plaques, free books and magazines, Pizza Hut brunches, and other incentives to encourage recreational reading.
- establishment and operation of active faculty committees dealing respectively with reading and other curriculum areas, hiring of new staff, and maintenance of high academic standards. Operation of such committees has been strongly encouraged by the Orange County Public Schools and has been consistently supported and facilitated by former

*Data on the first year of the STAR program indicate that among 74 students who had pre-and post-scores on the DRP test, the average gain was seven points (from 58.3 to 65.3)

Principal Albert Helms and his administrative colleagues and current-principal Joseph Joyner.

- development and implementation of explicit attendance and dress code policies, a program to award school "letters" for academic performance, a peer-counseling program, adult-volunteer services, and other activities designed in part to help establish and maintain a positive school climate.

Teacher Questionnaire

In the Spring of 1989 we prepared and distributed an anonymous questionnaire designed to assess Apopka teachers' reactions to comprehension-improvement strategies emphasized in staff development which had been conducted for faculty during the preceding five years. We obtained 68 reasonably-complete questionnaires from faculty who designated their major teaching fields as follows: 21 Language Arts, Reading, and/or English teachers; eight Math teachers; seven Science teachers; seven Industrial Arts or Technology teachers; six Social Studies teachers; five Business or Computer teachers; three Foreign Language teachers; three Health or Physical Education teachers; three Special Education teachers; two Art teachers; one ROTC teacher; and two teachers who did not designate their teaching field.

Regarding frequency of use of comprehension-improvement strategies, teachers were asked to check one response category ranging from "very often" to "never", for each of 21 strategies*. "Very often" was coded as one; "never" was coded as five.

As shown in Table III.3, the comprehension-improvement strategy which respondents replied they used most frequently was Following Directions, followed by Structured Overview, Prediction, Sentence Summaries, and PREP (Pre-reading Plan); for all these strategies, the number of teachers who stated that their frequency of use was "very often" or "often" was greater than the number who designated "sometimes", "hardly ever", or "never". Conversely, the strategies designated as used least frequently were Pyramid Diagram, DRTA, and Semantic Feature. These latter three strategies were

*See Appendix A for a glossary describing each strategy.

Table III.3

Apopka High School Faculty Designation of Frequency of Use of Selected Comprehension-Improvement Strategies *

	Frequency of Use (N of Responses)					
Strategy**	Very Often	Often	Sometimes	Hardly Ever	Never	Mean ***
DRTA	6	8	7	4	19	3.5
SQ3R	8	13	19	7	12	3.0
SEMANTIC MAPPING	11	11	17	5	13	3.0
SEMANTIC FEATURE	6	5	11	7	17	3.5
PREDICTION	11	26	17	9	8	2.5
SENTENCE SUMMARIES	14	20	13	6	7	2.5
STORY MAP	6	9	25	4	27	3.3
STRUCTURED OVERVIEW	23	15	19	2	4	2.2
FRAYER MODEL	3	13	13	3	18	3.4
POSSIBLE SENTENCES	6	14	10	7	16	3.2
THINK ALOUD	19	24	12	4	3	2.2
PREP (Pre-reading Plan)	12	19	7	4	14	2.8
KWL (Know/Write/Learn)	7	10	12	5	17	3.3
EVALUATIVE LISTENING	5	19	16	3	13	3.0
FOLLOWING DIRECTIONS	33	21	6	1	2	1.7
CORNELL NOTE-TAKING	11	14	16	6	17	3.1
ANTICIPATION GUIDES	6	13	11	6	17	3.3
GRAPHIC ORGANIZERS	10	14	10	4	18	3.1
FRAMED PARAGRAPHS	11	11	8	6	21	3.3
PYRAMID DIAGRAM	1	5	9	5	28	4.1
LIST-GROUP-LABEL	10	14	7	6	20	3.2

* Sixty-eight faculty members returned usable questionnaires, but some did not respond to every item.

** A glossary describing each strategy is provided in Appendix A.

*** Very often = 1; never = 5.

the only ones for which more teachers designated "never" or "hardly ever" than designated "sometimes", "often", or "very often". The average mean score across the 21 strategies was 3.01--almost exactly the "sometimes" category on the five-point scale.

Regarding perceived effectiveness of comprehension-improvement strategies, Apopka respondents generally were very positive. As shown in Table III.4, all but five (DRTA, SQ3R, Possible Sentences, Anticipation Guides, and Pyramid Diagram) of the 21 strategies had mean-score designations between "very" effective and "some" effectiveness on the four-point contium, and the latter five strategies all had mean scores closer to "some" than "little" effectiveness. The strategies designated as most effective were Following Directions and Structured Overview, for which more respondents selected "very" effective than designated "some", "little", or "hardly any" effectiveness. Think Aloud, PREP, Prediction, Graphic Organizers, and Framed Paragraphs received the next highest scores with respect to effectiveness. The mean effectiveness score across the 21 strategies in Table III.4 was 1.9--close to "some" effectiveness on the four-point continuum.

We also examined relationships between respondents' reported frequency of use of comprehension-improvement strategies and their perceptions of the effectiveness of the strategies. The correlation coefficient between the means shown in Table III.3 and those shown in Table III.4 was .83 ($p = .001$), thus indicating that more frequent reported use is associated with more perceived effectiveness. In addition, as shown in Table III.5, the data clearly showed that with the exception of two strategies (Possible Sentences, Following Directions), teachers who reported more frequent use

Table III.4

Apopka High School Faculty Designation of Effectiveness of Selected Comprehension-Improvement Strategies *

	Perceived Effectiveness (N of Responses)					
Strategy**	Very	Some	Little	Hardly Any	Not Applicable	Mean ***
DRTA	7	10	6	3	16	2.2
SQ3R	10	20	9	4	9	2.2
SEMANTIC MAPPING	14	22	7	1	8	1.9
SEMANTIC FEATURE	9	13	5	2	12	2.0
PREDICTION	21	23	8	0	3	1.8
SENTENCE SUMMARIES	23	23	4	0	5	1.6
STORY MAP	8	18	4	2	13	2.0
STRUCTURED OVERVIEW	32	19	5	1	1	1.6
FRAYER MODEL	13	11	5	2	12	1.9
POSSIBLE SENTENCES	7	19	8	2	11	2.1
THINK ALOUD	28	20	9	1	2	1.7
PREP (Pre-reading Plan)	26	22	9	1	2	1.7
KWL (Know/Write/Learn)	9	19	3	2	15	1.9
EVALUATIVE LISTENING	14	20	5	2	11	1.9
FOLLOWING DIRECTIONS	35	22	3	0	2	1.5
CORNELL NOTE-TAKING	18	20	7	2	11	1.9
ANTICIPATION GUIDES	10	15	6	3	12	2.1
GRAPHIC ORGANIZERS	17	13	5	2	12	1.8
FRAMED PARAGRAPHS	16	15	5	1	12	1.8
PYRAMID DIAGRAM	6	8	1	5	21	2.3
LIST-GROUP-LABEL	12	15	4	4	16	2.0

* Sixty-eight faculty members returned usable questionnaires, but some did not respond to every item.

** A glossary describing each strategy is provided in Appendix A.

*** Very = 1, hardly any = 4.

Table III.5

Relationship Between Reported Frequency of Use and Perceived Effectiveness of Use of Comprehension-Improvement Strategies *

Strategy**	Frequency Of Use	Effectiveness More	Effectiveness Less	p***	Effect Size
DRTA	More	11	3	.09	.75
	Less	5	6		
SQ3R	More	18	2	.01	.85
	Less	12	10		
SEMANTIC MAPPING	More	20	1	.02	.80
	Less	15	7		
SEMANTIC FEATURE	More	11	0	.02	1.20
	Less	11	7		
PREDICTION	More	34	0	.00	1.30
	Less	9	8		
SENTENCE SUMMARY	More	32	1	.07	.45
	Less	14	3		
STORY MAP	More	14	1	.10	.65
	Less	12	5		
STRUCTURED OVERVIEW	More	36	1	.01	.70
	Less	15	5		
FRAYER MODEL	More	15	1	.02	.86
	Less	9	6		
POSSIBLE SENTENCES	More	16	4	.24	.45
	Less	10	6		
THINK ALOUD	More	40	2	.00	1.10
	Less	8	8		
PREP (Pre-Reading Plan)	More	28	1	.00	1.30
	Less	5	6		
KWL (Know/ Write/Learn)	More	17	0	.01	1.05
	Less	11	5		
EVALUATION LISTENING	More	23	1	.01	.85
	Less	11	6		
FOLLOWING DIRECTIONS	More	50	2	***	.05
	Less	6	0		
CORNELL NOTE-TAKING	More	25	0	.00	1.15
	Less	13	9		
ANTICIPATION GUIDES	More	19	0	.00	1.40
	Less	7	9		
GRAPHIC ORGANIZERS	More	23	0	.00	1.30
	Less	7	6		
FRAMED PARAGRAPHS	More	22	0	.00	1.15
	Less	8	6		
PYRAMID DIAGRAM	More	6	0	.04	1.25
	Less	7	6		
LIST-GROUP-LABEL	More	21	2	.01	.96
	Less	6	6		

* "More" frequency of use = "very often", "often", or "sometimes" responses.
"More" effectiveness = "very' or "some" responses.

** A glossary describing each strategy is provided in Appendix A.

*** p values are drawn from phi coefficients.

**** Not possible to calculate due to two cells with less than five respondents.

124

also had relatively more positive perception of a given strategy's effectiveness, and vice versa. Differences of this kind were all statistically significant at the .10 level or lower, and all had effect sizes in the moderate range or larger.*

Of course, it is not surprising that teachers who use comprehension-improvement strategies relatively less frequently also perceive such strategies as relatively less effective, or that those who perceive strategies to be relatively more effective report using them more frequently. Causality in this relationship probably functions in both directions.

Despite our inability to delineate causation in the relationship between reported frequency of use and perceived effectiveness, it is useful to note that 1) 82 percent of the effectiveness designations from respondents who replied and did not select "not applicable" (Table III.5) were in either the "very" effective or "some" effectiveness categories, 2) among respondents who indicated that they used a given strategy at least "sometimes", 95 percent said they had found the strategy either to be "very" effective or to have "some" effectiveness; and 3) among respondents who said they had "never" used a given strategy, 95 percent either responded "not applicable" or did not respond at all regarding effectiveness. Taken together, these patterns suggest not only that our Apopka respondents treated the questionnaire seriously, but also that faculty who have been able and/or willing to try strategies are finding them to be generally effective. We also should note that among respondents who said they "hardly ever" had used a given strategy and who also provided an

*Effect sizes were calculated using Cohen's (1988) h statistic for the difference between two proportions. According to Cohen, effect sizes for differences between proportions generally can be categorized as follows: .20 = small; .50 = large; .80 = large.

effectiveness designation, 48 percent said the strategy had a least "some" effectiveness, thus suggesting that some other reason than lack of effectiveness accounted for their infrequent use among these respondents.

Frequency of Use Related to Teaching Field and Years of Experience. In order to investigate possible relationships between reported frequency of use of comprehension-improvement strategies on the one hand and respondents' teaching field and years of experience on the other, we carried out a principal-axis factor analysis of frequency for regarding the 21 strategies shown in Tables III.3 through III.6. Unfortunately, listwise deletion of questionnaires with missing values left too few respondents to utilize factor scores in further analysis, but additional exploration showed that pairwise deletion provided very similar loadings and more cases for further analysis. As shown in Table III.6, twenty of the 21 strategies had loadings of .39 or higher on the principal factor, which accounted for 48 percent of the variance in the data set, and which we named High/Low Frequency of Use. These results indicate that with the exception of Following Directions, respondents who report more frequent use of a given strategy also report more frequent use of other strategies. Responses to Following Directions were essentially uncorrelated (loading = .20) with responses to the larger set of strategies, at least in part because so large a majority of respondents (86% - see Table III.3) reported using it "very often" or "often".

The next step in this analysis was to calculate scores on High/Low Frequency of Use for respondents grouped by teaching field. Unfortunately, there were not sufficient teachers except in the Language Arts/Reading/

Table III.6

Variable Loadings for High/Low Frequency of Use Factor Among Respondents at Apopka High School

Strategy*	Loading
DRTA	.66
SQ3R	.85
SEMANTIC MAPPING	.83
SEMANTIC FEATURE	.84
PREDICTION	.66
SENTENCE SUMMARIES	.76
STORY MAP	.74
STRUCTURED OVERVIEW	.66
FRAYER MODEL	.58
POSSIBLE SENTENCES	.77
THINK ALOUD	.74
PREP (Pre-reading Plan)	.71
KWL (Know/Write/Learn)	.61
EVALUATION LISTENING DRILL	.39
FOLLOWING DIRECTIONS	.20
CORNELL NOTE-TAKING	.52
ANTICIPATION GUIDES	.67
GRAPHIC ORGANIZERS	.79
FRAMED PARAGRAPHS	.68
PYRAMID DIAGRAM	.69
LIST-GROUP-LABEL	.81

* A glossary describing each strategy is provided in Appendix A.

English subgroup to allow for comparisons between social studies, math, science, or other subgroups of teachers. Accordingly, we compared the Language Arts/Reading/English subgroup with the remaining respondents as one combined group.

Resulting data showed that the Language Arts/Reading/English subgroup (N=10) had a mean score of -.35 on High/Low Frequency of Use, compared with a mean score of .61 for the remaining group of Apopka teachers (N=19).* The probability that this difference in mean scores is due to chance is .02, and the effect size of the difference is .96 (i.e., a "large" difference). These results indicate that Language Arts/Reading/English teachers report greater frequency of use of comprehension-improvement strategies than do the remaining teachers in our sample of Apopka faculty. However, we should emphasize that even after we remove Language Arts/ Reading/English teachers from our sample and then re-calculate average frequency-of-use scores for other teachers, the overall average score for the 21 strategies is 3.25--not greatly different from the 3.01 we calculated for the scores shown in Table III.3.

As regards possible relationships between frequency of use of comprehension-improvement strategies and years of experience, Pearson correlation analysis relating High/Low Frequency of Use to years of experience indicated that this relationship was not statistically significant at the .10 level.

*Factor-score variables are standarized to a mean of zero and a standard deviation of one.

Effectiveness of Use Related to Teaching Field. Due to the larger number of non-responses and the "not applicable" responses to items dealing with perceived effectiveness of comprehension- improvement strategies, we were not able to use factor analysis to determine whether all or most of the items constitute a single set of interrelated variables. Instead, we used Chi-square analysis to determine whether the Language Arts/Reading/English subgroup differed from other teachers in the sample on each item separately. The results are presented in Table III.7.

As shown in Table III.7, there were only three strategies (Semantic Mapping, KWL, and Anticipation Guides) for which the proportion of Language Arts/Reading/English teachers designating "very" or "some" effectiveness differed significantly at the .10 level or lower from the proportion of other teachers designating these responses. (Due to the small number of strategies on which the groups appeared to differ, we did not calculate effect sizes.) Since one or two differences of this kind should occur by chance in 21 comparisons, we conclude that the two groups of teachers do not differ in designating the effectiveness of comprehension-improvement strategies which they report having used in the classroom.

Since Language Arts/Reading/English teachers report more frequent use (see preceding section) of comprehension-improvement strategies than do other teachers in our sample but the two groups do not differ in perceptions of the effectiveness of strategies, we infer that "other" teachers who have been willing or able to try strategies generally have found them to be at least somewhat effective. To help examine this inference, we cross-tabulated the frequency and effectiveness designations of teachers other than those in the Language Arts/Reading/English group. The results, shown in Table III.8, indicated that in 269 of 279 instances (96%) in which a

Table III.7

Perceived Effectiveness of Comprehension-Improvement Strategies Reported by Language Art/Reading/English Teachers and Other Teachers

Strategy*	Teacher** Group	Effectiveness (N of Respondents) More	Less	p
DRTA	1	11	5	.51
	2	5	4	
SQ3R	1	18	11	.78
	2	8	4	
SEMANTIC MAPPING	1	17	19	.01
	2	7	0	
SEMANTIC FEATURE	1	13	8	.82
	2	4	3	
PREDICTION	1	27	16	.66
	2	5	2	
SENTENCE SUMMARY	1	26	19	.76
	2	2	2	
STORY MAP	1	8	16	.14
	2	4	2	
STRUCTURED OVERVIEW	1	33	17	.78
	2	3	2	
FRAYER MODEL	1	13	10	.53
	2	3	4	
POSSIBLE SENTENCES	1	15	10	.98
	2	6	1	
THINK ALOUD	1	30	18	.17
	2	7	1	
PREP (Pre-Reading Plan)	1	31	18	.26
	2	8	1	
KWL (Know/ Write/Learn)	1	21	6	.08
	2	2	3	
EVALUATION LISTENING	1	22	10	.55
	2	4	3	
FOLLOWING DIRECTIONS	1	39	16	.17
	2	1	2	
CORNELL NOTE-TAKING	1	21	15	.65
	2	6	3	
ANTICIPATION GUIDES	1	11	7	.10
	2	7	2	
GRAPHIC ORGANIZERS	1	15	13	.39
	2	5	2	
FRAMED PARAGRAPHS	1	13	17	.13
	2	4	1	
PYRAMID DIAGRAM	1	6	8	.51
	2	3	2	
LIST-GROUP-LABEL	1	18	8	.11
	2	3	5	

* A glossary describing each strategy is provided in Appendix A.

** Group 2 = Language Arts/Reading/English teachers; Group 1 = other teachers

*** More effectiveness = "very" or "some" responses. Less effectiveness = "little" or "hardly any" responses.

Table III.8

Effectiveness Designation of Apopka Teachers, Other than Language Arts/ Reading/English Teachers, Who Reported Using a Given Strategy "Very Often" or "Often"

	"Very" or "Some"	"Little" or "Hardly Any"
DRTA	7	2
SQ3R	9	1
SEMANTIC MAPPING	10	0
SEMANTIC FEATURE	6	0
PREDICTION	21	0
SENTENCE SUMMARIES	17	0
STORY MAP	3	0
STRUCTURED OVERVIEW	22	0
FRAYER MODEL	8	1
POSSIBLE SENTENCES	9	2
THINK ALOUD	24	1
PREP (Pre-reading Plan)	14	1
KWL (Know/Write/Learn)	13	0
EVALUATION LISTENING	33	1
FOLLOWING DIRECTIONS	14	0
CORNELL NOTE TAKING	14	0
ANTICIPATION GUIDES	8	0
GRAPHIC ORGANIZERS	12	0
FRAMED PARAGRAPHS	8	0
PYRAMID DIAGRAM	3	0
LIST-GROUP-LABEL	14	1

* A glossary describing each strategy is provided in Appendix A.

teacher reported having used a given strategy either "very often" or "often', he or she perceived that strategy as being "very" effective or having "some" effectiveness. This pattern is consistent with our inference that Apopka teachers other than those in the Language Arts/Reading/English group also have found comprehension-improvement strategies to be at least somewhat effective after using them in their classroom.

Applicability of Strategies in Content Areas. Comprehension-improvement strategies emphasized at the schools at which data were collected for this report generally are designed not just to improve students' comprehension per se, but to improve teaching and learning in the various "content" subjects or areas, i.e. art, career eduction, English, foreign language, mathematics, music, science, social studies, etc. In order to estimate the extent to which comprehension-improvement strategies emphasized at Apopka are "applicable" in or suitable for improving comprehension of subject-matter in content- area instruction, we asked three university professors of reading to rate the 21 strategies on two five-point scales respectively designating 1) the "potential applicability to content areas" of each strategy and also its "ease of applicability".

As regards ease of applicability, the seven strategies which received the highest scores from the three professors were: Semantic Mapping, Prediction, Sentence Summaries, Possible Sentences, Thinking Aloud, PREP (Pre-reading Plan, and Following Directions. These seven strategies also received the highest ratings (i.e. lowest scores) assigned by Apopka faculty with respect to frequency of use (Table III.3) and effectiveness (Table III.4). (For effectiveness of use, Graphic Organizers and Framed Paragraphs were tied with Prediction as the seventh highest-ranked strategy.) Thus Apopka faculty designations of frequency of use and

effectiveness of comprehension-improvement strategies are very strongly related to professors' ratings of the ease with which these strategies can be used in content-area instruction.

As regards "potential" applicability of strategies in content areas, the eight strategies rated highest by the reading professors were DRTA, Prediction, Story Maps, Structured Overview, KWL (Know/Write/Learn), Anticipation Guides, Graphic Organizers, and List-Groups-Label. Only two of these strategies Prediction and Structured Overview-were among the seven which Apopka faculty reported using most frequently or the nine they perceived as being most effective. These results suggest that insufficient time and other constraints may be limiting Apopka teachers' capacity and willingness to prepare and implement strategies that are potentially most effective but also are difficult to prepare and implement, even though much has been done at Apopka to help teachers learn about and use comprehension-improvement strategies.

Match of Materials with DPP Scores. Apopka respondents were requested to answer the item, "To what extent have you been able to match materials and students' DRP scores?". Among the 58 teachers who responded, eleven checked "very much", 28 selected "somewhat", four checked "not very much", and fifteen answered "not at all". Thus 67 percent stated that they had been able to match instructional materials and students at least "somewhat".

It should be noted that the two-thirds of Apopka respondents who selected "very much" or "somewhat" is considerably higher than the comparable percentage (i.e. 35%) of IS 115 respondents who checked these responses (h = .66; effect size = moderate). It appears that Apopka faculty have been more successful than IS 115 faculty in moving to bring about a better match between materials and students. If so, this

difference may be related to the fact that Apopka is a large comprehensive high school at which considerable schoolwide emphasis has been placed on using DRP scores to match materials and students*. By way of contrast, IS 115 has an enrollment much more homogeneous with respect to student performance levels, and efforts other than use of DRP scores apparently have been undertaken to improve the match, primarily through district-level preparation and selection of materials.

Apopka respondents also were asked, "When (if) you have been able to match materials and students' DRP scores, how much has matching helped improve learning?" In reply, eleven teachers selected the "very much" category, 21 selected "somewhat", and six checked "hardly ever" or "never". Among the 22 faculty who answered both questions and responded that the extent to which they matched materials and students was "very much" or "somewhat", 21 regarded that such matching had been at least "somewhat" helpful in terms of improved learning. Like IS 115 faculty (see Chapter II of this report), Apopka faculty who have found ways to match materials and students' DRP scores thus generally report that matching has been at least somewhat helpful in improving learning.

In addition, respondents were asked "In what subject area or areas have you matched materials and students?". The responses closely paralleled respondents' teaching fields (see Table III.9). Some action to match materials and students thus appears to have been taken in virtually every subject area at Apopka High School.

As regards possible differences in the extent to which teachers in differing fields reported they had been able to "match materials and

*As noted in preceding sections, approaches to improve the materials/student match have included purchase and use of a scanner to obtain DRP scores for materials, establishment of DRP ranges for use in grouping, and in-service training dealing with interpretation and utilization of DRP scores.

students' DRP scores", most of the teaching-field subgroups in our Apopka sample were too small to allow for this kind of comparison. However, we concluded that the numbers of responses did make it possible to provide an exploratory comparison of four subgroups, namely Language Arts/Reading/English, Mathematics, Industrial Arts/Technology, and Science. Responses to the extent-of- matching questions for these subgroups are presented in Table III.10.

Table III.9

Teaching Field of Respondents and Designations of Subject Areas in which Apopka Teachers Reported Matching Materials and Students

Teaching Field/Subject Areas	Number of Respondents	Number of Designations*
Language Arts/Reading/English	21	20
Mathematics	8	7
Industrial Arts/Technology	7	7
Science	7	8
Social Studies	6	8
Business/Computers	5	5
Foreign Language	3	3
Health/Physical Education	3	3
Special Education (SLD)	3	3
Art	2	2
ROTC	1	1
Not specified	2	2
	68	69

* Several teachers in more than one field provided multiple designations. Two designations which were classified as "miscellaneous" are not shown in this table.

As shown in Table III.10, it appears that Language Arts/Reading/English teachers and Science teachers were more likely than their Mathematics and Industrial Arts/Technology counterparts to indicate they had been able to

match materials with students' DRP scores at least "somewhat". (Numbers were too small to allow for a statistical test across all four subgroups, but a 2x2 Chi-Square comparing Language Arts/Reading/English teachers plus Science teachers on the one hand with a combined Mathematics and Industrial Arts/Technology group on the other produced a p =.01 and a large effect size = .85). This result suggests that as one might expect, it is comparatively difficult for teachers of relatively non-verbal subjects such as math and industrial arts to match materials and students using DRP scores.

Table III.10

Extent of Matching of Materials with Students' DRP Scores Reported by Selected Subgroups of Teachers

	Extent of Matching of Materials With Students' DRP Scores (N of Response)	
Teacher Subgroup	Very Much or Somewhat	Not Very Much or Not at All
Language Arts/Reading/English	15	4
Mathematics	3	4
Industrial Arts/Technology	2	4
Science	5	1

Summary

Located in a suburban area north of Orlando in Orange County, Florida, Apopka is a comprehensive high school enrolling approximately 2500 students in grades nine through twelve. Approximately two-thirds of Apopka students are non-Hispanic white, about one-fourth are African American, and six percent are Hispanic.

Analysis of DRP scores at Apopka indicated that achievement patterns included the following:

- for 1989 seniors, the average DRP gain from the ninth grade to the twelfth grade was 15.5 points (66.9 in the ninth grade; 82.4 in the twelfth grade).
- for 1990 seniors, the comparable average DRP achievement gain was 16.3 points (66.4 in the ninth grade; 82.7 in the twelfth grade).
- for 1991 seniors, the average achievement gain from the eighth grade to the twelfth grade was 16.8 points (63 in the eighth grade ; 79.8 in the eleventh grade).
- average gains from the eighth grade to the tenth grade during the past few years have averaged 13.2 points, representing more than four years of gain using DRP national norms.
- gains "level off" after the tenth grade, at least in part due to test ceiling effects. The overall pattern indicates that a large majority of Apopka's juniors and seniors have acquired sufficient comprehension capability to function successfully in their various classes and programs of study.
- gains in 1988-89 were smaller than in preceding years, possibly due to required overtesting of students.

- students with DRP pre-test scores below 58 had average gains of 8.3 in subsequent years. Even if some of this gain is attributed to regression to the mean, such progress for initially low readers appears to be impressive.
- ninth graders with DRP scores below 56 have gained fifteen to twenty points during the following three-to-four years, far beyond what could be reasonably attributed to regression to the mean.
- students who came from low-income families and were eligible for subsidized lunch have made gains comparable to those of other (i.e. higher-status) students.
- gains among African American students have been comparable to those among non-Hispanic white students.

Major educational improvement efforts related to improvement of students' comprehension at Apopka have included the following:

- Introduction of The Degrees of Reading Power (DRP) Program. Originally developed by the College Board, the DRP Program as implemented at Apopka and other sites in the Orange County Public Schools (OCPS) involved the following steps and components (Monahan: 1988, 1):

  1. Full-day orientation to provide awareness of how DRP test and staff-development components are designed to function.
  2. DRP testing supervised by the school-level Reading Resource Specialist (RRS, see below), using results to improve the match between students' comprehension levels and instructional materials in content-area classrooms.

3. Periodic training sessions at which the RRS shares information on use of the test and on strategies for matching student comprehension levels and instructional materials.

4. Calculation of DRP readability scores for instructional materials.

5. Infusion of DRP-related topics into OCPS courses on Reading in the Content Areas.

- Organization of Classes Based Substantially on DRP Scores. To a substantial extent, students are assigned to "Advanced", "Regular", or "Developmental" classes based on their DRP comprehension levels, rather than on standardized achievement test results as was done previously. Faculty whom we interviewed indicated that emphasis on DRP scores in assigning students to classes had proved productive and beneficial because doing so helps in aligning instructional materials with student performance, and because DRP scores have proven much easier for parents, students, and teachers to understand.
- Selection of Instructional Materials Based on DRP Scores. Apopka faculty are making extensive and systematic use of DRP scores in selecting materials through: 1) utilization of College Board publications that provide readability scores on textboods and other sources; 2) scoring materials on site with an Apple IIE computer; 3) participating in a district network in which educators share readability scores; and 4) providing faculty with continuous training in how to obtain readability scores and match students and materials.
- Emphasis on Comprehension-Improvement Strategies in Instructional Evaluation and Supervision. In conjunction with systematic staff development dealing with acquisition and use by teachers of comprehension-improvement strategies (see below), supervisors at

Apopka are emphasizing these strategies as a key element in lesson planning, selection of teachers for staff development, and evaluation of classroom processes and products.

- Employment of a Reading Resource Specialist (RRS). As at other Apopka intermediate and secondary schools, a full-time RRS is employed to provide leadership and assistance in designing and carrying out school wide efforts to improve students' performance with respect to comprehension and other skills.
- Staff Development Focussed on Comprehension-Improvement Strategies. The RRS is particularly responsible for organizing and helping to deliver regular staff development dealing with comprehension-improvement strategies. As at other OCPS intermediate and secondary schools, the RRS sets aside one day a week for conduct of staff development (titled Interdisciplinary Teaming) focussed on comprehension improvement and other related goals and activities.
- Availability of District-Level Services and Networking. Assistance available from the office of the OCPS Program Consultant for Middle and Secondary Reading and from other central office personnel includes networking across schools, technical advice regarding testing, materials matching, utilization of instructional strategies, and other topics related to comprehension improvement, conduct of relevant district and regional conferences and workshops, assistance in obtaining small grants, administrator training focussed on comprehension improvement, and help in developing annual plans.
- Conduct of Classroom Action Research. Staff development at Apopka and some other OCPS schools consistently has stressed "Classroom Action Research" in which teachers collect DRP scores on their students

before and after utilizing comprehension-improvement strategies. Gains are compared with other similar classes in order to help teachers and students "prove to themselves and others" that the strategies they introduce are "making a difference. As a result content area teachers assume ownership and enhance their teaching practices" (Monahan, 1987:678).

- Additional Activities and Programs Supporting Comprehension Improvement. Among a wide variety of additional activities and programs supporting improvement in students' comprehension skills are: a ninth-grade mini-school for at-risk students; provision of tutoring after school; encouragement of writing in all classes and disciplines; conduct between 1985 and 1989 of schoolwide silent reading; encouragement and use of cooperative learning approaches; limitation of English teachers' load to four classes a day with a maximum of 25 students each, together with elimination of their non-teaching "duty" responsibilities; use of certificates, Pizza Hut lunches, and other incentives to encourage recreational reading; functioning of active faculty committees dealing respectively with reading and other curriculum areas, hiring of new staff, and maintenance of high academic standards; and implementation of attendance and dress code policies, a program to award school "letters" for academic performance, a peer-counseling program, and other activities designed in part to maintain a positive school climate.

In the spring of 1989 we administered a questionnaire which was returned by 68 Apopka teachers. Twenty-one of these respondents are Language Arts, Reading, and/or English teachers, eight are Math teachers, seven (each) are Science or Industrial Arts/Technology teachers, six are

Social Studies teachers, five are Business or Computer teachers, three are Foreign Language teachers, three are Health or Physical Education teachers, three are Special Education teachers, two are Art teachers, one is an ROTC teacher, and two did not specify their teaching field.

The main part of the questionnaire asked respondents to designate the frequency with which they used 21 comprehension-improvement strategies and the extent to which they had found these strategies to be effective (see Tables III.3 and III.4). Respondents indicated that they used many of the strategies at least "sometimes" and that they had found most of these strategies to have at least "some" effectiveness. Strategies designated as most frequently used included Following Directions, Structured Overview, Prediction, Sentence Summaries, and PREP (Pre-reading Plan).* Strategies designated as most effective included Following Directions and Structured Overview, followed by Think Aloud, PREP, Prediction, Graphic Organizers, and Framed Paragraphs. Respondents' ratings of frequency and effectiveness were highly correlated ($r = .83$).

Other conclusions from the questionnaire we administered to Apopka teachers included the following:

- Teachers of Language Arts/Reading/English reported more frequent use of comprehension-improvement strategies than did other teachers (considered as a group) in our sample.
- Teachers of Language Arts/Reading/English did not differ systematically from other teachers in rating the effectiveness of comprehension-improvement strategies: both groups rated most strategies as being relatively high in effectiveness. We inferred

*A glossary of comprehension-improvement strategies is found in Appendix A.

from this pattern that teachers other than those in Language Arts/Reading/English who have been willing or able to try strategies generally have found them to be effective. Support for this inference was found in analysis indicating that among these "other" teachers, those who reported having used a given strategy "very often" or "often" almost always designated that strategy as having at least "some" effectiveness.

- when we obtained ratings from three professors of reading regarding the "potential applicability" and "the ease of applicability to content areas" of each of the 21 comprehension-improvement strategies listed in Tables III.3 and III.4, and then compared these ratings with Apopka respondents' designations regarding frequency of use and effectiveness, we found that these latter designations were very strongly related to the professors' ratings of "ease of applicability". However, only two (Prediction and Structured Overview) of the eight strategies which the professors rated as having the greatest "potential applicability" to content-area instruction were among the seven which Apopka faculty reported using most frequently or the nine they perceived as being most effective. These results suggest that insufficient time and other constraints may be limiting Apopka teachers' capacity and willingness to use strategies that are potentially most effective but also are difficult to prepare and implement, even though much has been done at Apopka to help teachers learn about and make use of comprehension-improvement strategies.
- among 58 teachers who responded to the question, "To what extent have you been able to match materials and students' DRP scores?", 67 percent stated that they had been able to match materials and students

at least "somewhat". This percentage contrasted with the 35 percent of IS 115 respondents who responded similarly. Apopka faculty's apparently greater success in matching materials and students may be related to the fact that Apopka is a large comprehensive high school at which considerable schoolwide emphasis has been placed on matching through use of DRP scores. By way of contrast, IS 115 is more homogeneous with respect to student performance, and more action other than use of DRP scores appears to have been undertaken to improve the match, primarily through district-level preparation and selection of materials.

- among 38 teachers who responded to the question, "When (if) you have been able to match materials and students' DRP scores, how much has matching helped improve learning?", 32 selected "very much" or "somewhat"; only six checked "hardly ever" or "somewhat". Among the 22 teachers who responded to both matching questions and said they had been able to match materials and students' DRP scores at least "somewhat", 21 responded that such matching had been at least "somewhat" helpful in improving student learning.
- analysis of teachers' responses with respect to matching by teaching field suggested that it is comparatively difficult for teachers of relatively non-verbal subjects such as math and industrial arts to match students and materials using DRP scores.

IV. DISCUSSION AND CONCLUSIONS

Preceding sections of this report described comprehension-improvement efforts and related activities and developments at three locations: ninth-grade School-within-a-School (SWAS) units for low achieving students in Kansas City (MO) high schools; Intermediate School 115 (grades 6-8) in the Bronx borough of New York City; and Apopka High School (grades 9-12) in the Orange County Public Schools in the Orlando, Florida Metropolitan Area. At all three locations, substantial gains appear to have been made with respect to students' reading comprehension performance on the Degrees of Reading Power (DRP) test. At all three locations, emphasis in improvement efforts included substantial staff development, activities to motivate students, and utilization with local variations of an approach the College Board developed to help teachers acquire and implement instructional strategies for enhancing students' comprehension.

Each section concluded with a brief summary of activities and developments at the school-building level and of conclusions we reached based on site visits, interviews, and questionnaires administered to teachers. Similar summaries also are provided in the Abstract at the beginning of this report. We will not repeat those summaries here, but instead will proceed to discuss our findings and conclusions under two primary headings: Acquisition and Utilization of Comprehension-Improvement Strategies, and Exemplification of Effective Schools Characteristics.

Acquisition and Utilization of Comprehension-Improvement Strategies

First, at all three locations substantial staff-and-organizational development resources and technical assistance have been available to help participating teachers acquire and implement comprehension-improvement

strategies. Among the most obvious and visible aspects of such resources and assistance are the half-time Coordinator assigned to work with four or five teachers at each SWAS unit and the full-time Resource Teacher teacher who provides help across units, the full-time Reading Resource Specialist at Apopka High School, and the full-time Reading Resource Teacher/Staff Developer and the part-time Staff Developer at Intermediate School 115.

Second, at all three locations teachers who report having used comprehension-improvement strategies in their classrooms generally perceive most strategies as having had at least some effectiveness. Evidence for this conclusion is summarized in Table IV.1, which presents the average scores obtained at each location when teachers responding to our questionnaire were asked to designate the effectiveness of each strategy emphasized at their site on a four-point scale ranging from "very" effective (1) to "hardly any" effectiveness (4). As shown in Table IV.1, most strategies received mean scores between 1 and 2, which is between "very" and "some" on our effectiveness scale.

Third, as one would expect some strategies were designated as being used relatively frequently and others were designated as being infrequently utilized. For example, data in Table IV.1 show that at Apopka High School Following Directions, Structured Overview, and Think Aloud had mean ratings close to the "very often" point on the five-point scale on which respondents designated frequency of use, while Pyramid Diagram had a mean rating close to the "hardly ever" point.

Fourth, in instances where a particular strategy was included in our questionnaires at more than one location (because local developers indicated that it had received significant attention in staff development), teachers at one location tended to provide a frequency-of-use rating

Table IV.1
Faculty Designations of Frequency of Use and Effectiveness of Comprehension-Improvement Strategies, by Location

	Frequency of Use**			Perceived Effectiveness ***		
Strategy*	Apopka	IS 115	SWAS	Apopka	IS 115	SWAS
ANTICIPATION GUIDES	3.3	2.3	2.3	2.1	2.6	2.2
CORNELL NOTE-TAKING	3.1	--	--	1.9	--	
DRA	--	--	2.5	--	--	1.7
DRTA	3.5	2.8	--	2.2	1.7	--
EVALUATIVE LISTENING	3.0	--	--	1.9	--	--
FOLLOWING DIRECTIONS	1.7	--	--	1.5	--	--
FRAMED PARAGRAPHS	3.3	--	--	1.8	--	--
FRAYER MODEL	3.4	--	--	1.9	--	--
GRAPHIC ORGANIZERS	3.1	2.6	--	1.8	1.9	--
GUIDED READING	--	2.1	--	--	1.7	--
JOURNAL ENTRIES	--	2.7	--	--	1.4	--
KEYWORD CATEGORIZATION	--	3.1	--	--	1.7	--
KWL (Know/Write/Learn)	3.3	3.5	3.2	1.9	1.9	2.2
LIST-GROUP-LABEL	3.2	--	--	2.0	--	--
PATTERN GUIDES	--	3.6	--	--	2.3	--
POSSIBLE SENTENCES	3.2	--	--	2.1	--	--
PREDICTION	2.5	1.7	1.9	1.8	1.5	1.4
PREP (Pre-reading Plan)	2.8	--	2.9	1.7	--	1.7
PYRAMID DIAGRAM	4.1	--	--	2.3	--	--
QAR	--	2.5	--	--	1.9	--
QUESTIONS ONLY	--	2.5	3.3	--	1.7	2.7
SELF-GENERATED QUESTIONS	--	2.4	--	--	1.9	--
REQUEST	--	--	3.9	--	--	3.0
RE-TELLING	--	1.6	--	--	1.6	--
SEMANTIC FEATURE	3.5	--	--	2.0	--	--
SEMANTIC, CONCEPT MAP, WEB	3.0	1.9	2.5	1.9	1.8	1.7
SENTENCE SUMMARIES	2.5	--	--	1.6	--	--
SQ3R	3.0	--	3.0	2.2	--	2.0
STORY MAP	3.3	--	3.3	2.0	--	2.0
STRIP STORY	--	3.6	--	--	2.2	--
STRUCTURED OVERVIEW	2.2	--	2.4	1.6	--	1.7
THINK ALOUD	2.2	--	--	1.7	--	--
THREE-LEVEL GUIDES	--	2.9	4.2	--	1.9	2.8
TIME LINES	--	2.9	--	--	2.0	--

* A glossary describing each strategy is provided in Appendix A.

** Very often = 1; never = 5.

*** Very = 1; hardly any = 4.

similar to that provided by teachers at the other location(s). For example, respondents at IS 115 and SWAS respondents both rated Anticipation Guides at 2.3, and mean ratings for KWL were 3.3 (Apopka), 3.5 (IS 115), and 3.2 (SWAS), respectively. However, frequency-of-use ratings for some strategies were considerably different at one location than elsewhere (e.g., DRTA), and the number of intersite comparisons in Table IV.1 is relatively small. Although the general similarities in frequency-of-use ratings across locations suggest that some strategies may be more feasible and adaptable for classroom utilization than others, much additional research is needed to determine why teachers use any given strategy frequently or infrequently.

Fifth, respondents at all three locations reported that matching materials with students' DRP scores had been helpful in improving students' learning. Among SWAS respondents, eleven of twelve who said they had been at least somewhat successful in matching materials with students' DRP scores reported that this had been at least "somewhat helpful" in improving student performance. Comparable data for IS 115 and Apopka indicated that 43 of 54 respondents exemplified this same pattern.

It should be noted, however, that wide differences appeared to exist in the extent to which teachers had been able to match materials and students' DRP scores at differing locations. On the one hand, eighty percent of SWAS respondents and 67 percent of Apopka respondents said they had been at least somewhat successful in bringing about a match, compared with only 35 percent among IS 115 respondents. Relatively less success in matching reported by the IS 115 respondents may be related to the fact that substantial matching already had been attained there through district-and

school-level selection of materials and assignment of students to classes based partly on previous performance level.

Sixth, teachers at Apopka and IS 115, as well as those in the Kansas City SWAS program, appreciated the opportunity to learn about and choose among a variety of possible comprehension-improvement strategies. Based on five years of periodic observations of and discussion with SWAS teachers, and on interviews we conducted with teachers, administrators and key support staff at Apopka and IS 115, we believe that many teachers particularly welcome an approach based on the premise that there is no one strategy universally appropriate for all teachers, students, or classroom situations. When teachers receive information, training, and follow-up assistance involving a range of strategies, many are willing to try new approaches and to thoughtfully consider whether one or another approach is suited for a particular lesson and class of students. They also appreciate the implied underlying assumption that they are competent professionals who are able to select and adapt an appropriate strategy for use in their classroom.

Seventh, many teachers also benefitted from the opportunity to acquire awareness of strategies, try them out in the classroom, and learn how to implement them over an extended period of time. This generalization was articulated particularly well by an IS 115 teacher who told us that at first she "didn't feel comfortable" with certain strategies, but grew more positive after she had learned more about them, prepared appropriate materials, and discovered how they worked in her classroom.

Eighth, conducting workshops and other staff-development activities dealing with comprehension-improvement strategies over a period of years constituted a message that their utilization was becoming expected, normal

practice. Expressed by several knowledgeable observers at each of the locations included in our study, this conclusion is well in line with research indicating that leaders of unusually effective schools communicate schoolwide goals and expectations through activities and goals that receive continuous attention and reiteration over a long period of time.

Exemplification of Effective Schools Characteristics

Much has been learned in recent years concerning the characteristics of schools that produce achievement higher than is usual at most other schools that enroll students of similar socioeconomic background.* The two schools in our study and the SWAS program exemplify many of the characteristics that frequently been ascribed to these unusually effective schools. Examples denoting the manifestation of several such characteristics are described briefly below.

Active/Engaged Learning. Students' active participation and engagement in learning is systematically emphasized at all three locations included in our study. For example, IS 115 has provided opportunities for publication of students' written products and has emphasized urban and Hispanic studies, while the SWAS program has sponsored academic competitions across schools.

Apopka and IS 115 both have established schools-within-a-school partly to encourage more active participation in learning, and all three locations have emphasized comprehension-improvement strategies, which have been explicitly developed as pedagogical approaches to stimulate thinking and enhance involvement in cognitive tasks. In addition, cooperative learning approaches that facilitate active engagement have been stressed

*Effective school characteristics cited in this section are described in Levine and Lezotte (1990).

systematically in the SWAS program and have received considerable emphasis at Apopka and IS 115.

Grouping of Students and Provision of Intensive Assistance for Low Achievers. Research on unusually successful schools indicates that, in one way or another, they have devised and implemented arrangements to group students effectively for instruction and to utilize staff and other organizational resources in a manner that helps students-particularly low achieving students-succeed academically. In conjunction with grouping and other aspects of organizational arrangements, unusually effective schools are known for their dedication in providing intensive special assistance for low achievers.

Grouping of students is an extremely complex issue which we will not discuss at length here; instead we will summarize commonalities in successful grouping and related organizational arrangements at the three locations in our study by calling attention to their efforts in "levelling" their enrollment to enhance instructional effectiveness. We use the term "levelling" to refer to the practice of classifying students into a few broad groupings or levels based significantly on current reading performance. Through establishment of a few broad levels based on reading performance (e.g., average and above-average readers; poor readers), schools can concentrate on providing extra support for low achievers. Levelling may be a more useful term than "homogeneous grouping", because it implies an effort to avoid overuse of homogeneous grouping and tracking, along with an emphasis on providing intensive assistance to help low achievers master skills needed to function successfully thereafter in more heterogeneous learning environments.

Levelling has been a central part of the organizational arrangements at all three locations in this study. The SWAS program is based on ninth-grade levelling that provides small class sizes and other special assistance to help low achievers for an entire year, and both Apopka and IS 115 also have school-within-a-school arrangements for students who are low achievers and/or potential dropouts. In addition, Apopka provides "developmental" classes for students selected mainly on the basis of low DRP scores, and IS 115 offers a variety of special classes for low achievers including double-staffed Chapter 1 classes, a seventh-grade "Gates" class for non-promoted students, and bilingual classes.

Organizational levelling aimed at facilitating effective instruction for low achievers also is closely related to implementation of the College Board DRP approach at intermediate schools and high schools. This approach is based partly on the supposition that learning materials should be somewhat above students' comprehension levels during classroom instruction, and below their frustration levels during independent learning assignments. The DRP provides a technology to align students and materials in order to facilitate such matching.

However, identifying and providing multiple sets of materials to allow for matching across numerous subgroups within very heterogeneous classes is a daunting and perhaps even infeasible task in many secondary schools. Grouping and levelling of students within the schools and programs described in this report have helped make it possible to provide and utilize appropriate materials for broad groupings of students, particularly low achievers. Together with district, school, and classroom-level efforts (cited in the preceding chapters) to match materials and students, effective grouping and levelling thus help account for the gains in

comprehension performance that have been registered at the schools in this study.

Personal Development of Students. Several descriptions of unusually effective schools have portrayed them as placing special emphasis on facilitating students' personal and social development (e.g., Kozberg and Winegar, 1981; Levine, Levine, and Eubanks, 1984). Explicit and systematic stress on personal development seems to be particularly important in schools, such as IS 115 and several of those in the SWAS program, that enroll mostly disadvantaged students in the inner city. In line with this generalization, the SWAS program and the schools-within-a-school at Apopka and IS 115 have been organized specifically in order to provide their at-risk students with personal guidance and assistance from teachers selected for their willingness to carry out this function. In addition, IS 115 emphasizes personal development through a variety of resources and activities including two deans of students, sponsorship of a Peer Leadership program, conduct of after-school and Saturday classes for students and their parents, and cooperation with the Hispanic Research Center.

Coordination of Instruction. Studies of unusually effective schools have described a number of different ways in which their faculties coordinate instruction across classrooms in order to enhance the performance of low achievers. As noted in Chapter 1 of this report, coordination of instruction appears to be one of the foremost activities responsible for positive outcomes in the Kansas City SWAS program, and it also has been a principal underlying motive in establishing mini-schools at Apopka and IS 115. More generally, extensive coordination of instruction is being attained at all three locations through teachers' systematic utilization of

comprehension-improvement strategies, which provide a common and reinforcing thread in instruction as students move from one classroom to another.

Availability of Instructional Support Personnel. The first part of this chapter enumerated some of the ways in which considerable staff-and-organizational development resources have been made available to help teachers at the three locations described in this report. The critical importance of the persons providing this help was underscored in the high ratings SWAS teachers gave to coordinators and the Resource Teacher in assessing considerations responsible for success of the program (Chapter I), the high ratings IS 115 teachers assigned to workshops planned and/or conducted by staff development specialists working at the school (Chapter II), and the central school-improvement role performed by the Reading Resource Specialist at Apopka High School (Chapter III). In our opinion, schools which attempt to introduce and implement a schoolwide emphasis on instructional strategies to improve students' comprehension without providing an equally-high level of technical support for teachers probably will fail.

Outstanding Leadership. Functioning of outstanding leadership on the part of the principal and other persons has long been recognized as a prerequisite for substantially improving instructional effectiveness on a schoolwide basis. Key functions that have been identified as being frequently dependent on the contributions of outstanding administrators include vigorous selection and removal of teachers, provision of support for teachers, acquisition of resources for instructional improvement, and development of a coherent academic mission and positive learning climate throughout the school (Levine and Lezotte, 1990). Both of the schools

(Apopka and IS 115) which we described in this report would not have made substantial progress without the outstanding leadership that was provided by their respective principals and other administrators and teachers who helped facilitate introduction and utilization of comprehension-improvement strategies over a period of three-to-five years.

Focus on Key Skills and Higher-Order Learning in Assessment and Instruction. For various reasons, effective schools research historically tended to ignore issues involving the kinds of skills which schools were emphasizing in assessing student performance and implementing instructional improvements. As a result, some schools were identified as being unusually effective even though they concentrated on providing drill and practice on low-level skills that students memorized and regurgitated on tests of mechanical skills. Recent reexamination of two decades of effective schools research, however, indicates not only that effectiveness must be defined at least partly in terms of student performance with respect to relatively higher-order skills such as comprehension in reading and problem-solving in mathematics, but also that unusually effective schools with high performance above the second or third grade tend to focus both assessment and instructional improvement efforts on higher-order learning (Levine and Lezotte, 1990).

If the presence of a focus on key higher-order skills is used as a criterion for identifying effective schools, Apopka High School, IS 115, and the SWAS program should be viewed as exemplifying this characteristic associated with and partially responsible for unusual effectiveness. To a significant extent, this is because they have introduced and systematically implemented a schoolwide process for assessing and improving students' comprehension skills. Using the College Board DRP approach that provides

an assessment of each students' functional comprehension level, attends to issues involving the match between students' DRP scores and instructional materials, and, most important, concentrates faculty effort over a multiyear period on acquiring and implementing comprehension-improvement strategies in the classroom, faculty at all three sites in this study have made considerable progress in revising and reforming instructional arrangements and methods in order to help students improve their comprehension skills and thus their capacity to function successfully in all their classes.

National Urban Alliance Affiliation

Given the promising results that have been reported at the schools examined in this study and in several other school districts, the College Board DRP approach has been selected as one of the primary educational-reform emphases to be supported by the recently-formed National Urban Alliance for Effective Education (NUA). Established by a number of school districts, universities, the College Board, philanthropic foundations, the Simon and Schuster School Group, and other interested agencies and organizations, NUA will be working to help school districts introduce and successfully implement the DRP approach.* Services to be provided will include assistance in planning, scheduling, and conducting appropriate staff development, auditing and assessment of implementation and results, conduct of research designed to produce knowledge regarding effective implementation, provision of staff-development videotapes developed with a grant from the MacArthur Foundation, and preparation of relevant instructional materials for classroom use. With assistance from the NUA

*Information concerning the NUA can be obtained from Dr. Eric Cooper, Vice President, Educational Training and Telecommunications, Simon and Schuster, 250 James Street, Morristown, New Jersey 07960.-1918, 212-373-7980.

and other sources, many schools may be able to bring about future gains in students' comprehension as impressive as those registered at the schools included in this study.

Text References

Clark, J. n.d. A Team Approach. Interdisciplinary Teaming at Apopka High School. Apopka, FL: Apopka High School.

Cohen, J. 1988. Statistical Power Analysis for The Behavioral Sciences. Hillsdale, NJ: Erlbaum.

Cooper, E. J. and Harris, T. L., eds. 1985. Reading Thinking, and Concept Development. New York: College Entrance Examination Board.

Estes, H. and Estes, J. J. 1989. "Degrees of Reading Power as Virginia's Passport to Literacy". Reading in Virginia 14(Spring):6-13.

Gassman, G. W. 1988. Longitudinal Evaluation of the School-Within A School (SWAS) Program Kansas City, MO: The School District of Kansas City Evaluation Office.

Goldberg, I. M. 1989. Chapter 1 Schoolwide Project Proposal. Proposal prepared at Intermediate School 115, Bronx.

Gooden, F. E. 1985. A School-Within-A-School. Kansas City, MO: The Kansas City, Missouri School District.

Gooden, F. E., Lane, M., and Levine, D. U. 1989. A School-Within-A-School Approach for At-Risk Urban Students. Journal of Negro Education. 58(3): 367-371.

Ivens, S. H. and Koslin, B. L. 1989. "DRP: Decade of Change". Paper delivered at Florida Reading Council Conference, Sarasota, April 8.

Koslin, B. L., Koslin S., Zeno, S. M., and Ivens, S. H. 1989. DRP Teacher's Manual. Brewster, NY: Touchstone Applied Science Associates.

Koslin, B. L., Zeno, S.M., and Koslin, S. 1987. The DRP: An Effectiveness Measure in Reading. New York: College Entrance Examination Board.

Kozberg, G. and Winegar, J. 1981. "The South Boston Story: Implications for Secondary Schools", Phi Delta Kappan. 62(8): 565-567.

Levine, D. U. 1988. "Teaching Thinking to At-Risk Students: Generalizations and Speculation", in . B. Z. Presseisen, ed.. At-Risk Students and Thinking: Perspectives from Research. Washington, D.C. NEA and RBS.

Levine, D. U. and Campbell, V. 1984. Evaluation of School-Within A-School Units at Central, Northeast, Paseo, Southwest, and Westport High Schools. Kansas City: Center for the Study of Metropolitan Problems in Education.

Levine, D. U., Levine, R. F., and Eubanks, E. E. 1984. "Characteristics of Effective Inner-City Intermediate Schools", Phi Delta Kappan. 65:707-711.

Levine, D. U. and Lezotte, L. W. 1990. An Interpretive Review and Analysis of Research and Practice Dealing With Unusually Effective Schools. Madison, WI: University of Wisconsin Press.

Pearson, P. D. 1985. The Comprehension Revolution. Urbana, IL: University of Illinois at Urbana-Champaign Center for the Study of Reading Report No. 57.

Sherk, J. K. n.d. "DRP Materials Matching: Adjusting the System". Paper prepared at the School of Eduction, University of Missouri-Kansas City.

159

APPENDIX A.1
Glossary of Comprehension-Improvement Strategies*

STRATEGY	DESCRIPTION
ANTICIPATION GUIDES	A series of statements to which students must respond individually before reading text. Students connect their world knowledge to the prediction task. Value lies in discussion that takes place after exercise. Estes and Vaughan, 1985.
CONCEPT MAPPING	See Semantic Mapping, Webbing.
CORNELL NOTE-TAKING	A structured procedure for note-making which has been used by several generations of college students. Taught extensively in college reading and study courses. Pauk, 1989
DRA	A reading lesson; a developmental activity in which provision is made for orientation; silent reading for survey purpose, vocabulary and comprehension development, silent or oral reading, and follow-up. Betts, 1946.
DRTA	The teacher guides students in reading and fosters critical awareness by moving students through a process that involves prediction, verification, judgement, and ultimately extension of thought. Teacher agitates thinking by posing guided and/or reflective questions at different points. Stauffer, 1969.
EVALUATIVE LISTENING DRILL	Through "conferencing" with students via headsets and tape recorders, the teachers evaluates students' tests or essays. The student listens to the critique while examining the graded papers. Teachers frequently withhold the grade until after students hear the comments, in order to ensure that students attend to the critique.
FRAMED PARAGRAPHS	This writing activity involves structuring of a paragraph to be written so that the writer must include the necessary information. The "frame" is the beginning of the sentence provided so that the student completes the sentence using known information. Example. John was _____. The reason I feel this way is _____. In addition _____. Finally _____. Reinforces evaluative thinking, verification of opinion, and persuasion. Adler, 1974; Fowler, 1982.
FRAYER MODEL	A word categorizing activity which develops vocabulary and use of background information, selects a concept to be learned, and asks students to list examples of it. Students then work in groups to organize their lists into categories, discover characteristics common to all examples, and identify nonessential characteristics. Frayer and Klausmeir, 1969.
GRAPHIC ORGANIZERS	A chart which uses content vocabulary to help students anticipate concepts and their relationships to one another in the reading material. Barron, 1969; Hanf, 1971.

*References are provided in the next section (Appendix A.2.)

STRATEGY	DESCRIPTION
GUIDED READING PROCEDURE	An eight-step procedure designed to gather information and organize it around important ideas. Places a premium on accuracy of recall of text, brainstorming, and organization of information in memory for the long term. Manzo, 1974.
JOURNAL ENTRIES	Students record observations, feelings, events, and other personal learning data at prescribed intervals in an instructional setting. Such journal-writing activity is thought to produce awareness of learning and, thereby, heightened interest and motivation in the context of the study of a subject.
KEYWORD CATEGORIZATION	Pre-reading activity in which a list of key vocabulary words is written in random order on a chalkboard. Students working in groups, make up a scenario telling how the words and terms are related. Then, the students read a text to find out how close they match. Nessell, 1989.
KWL (Know/ Write/Learn	Students first brainstorm a topic to activate background knowledge. After brainstorming and discussion, students note on individual sheets what they feel they know about the topic. (K): Students generate questions before reading which they want to answer during reading. (W): During reading, additional questions can be added to the W column. As students read, they note any information in the (K) column of the worksheet. After reading, students discuss questions and resolve unknowns. Finally, they categorize information. Ogle, 1986.
LIST-GROUP-LABEL	Procedure helps students' vocabulary and categorization skills. Step 1: Teacher writes one-word topic on board; Step 2: Students brainstorm associations to the topic word. About 25 words should be recorded on board; Step 3: Students in small groups construct lists of at least three words from board having something in common. Groups record categories and lists to share with class. Taba, 1967.
PATTERN GUIDES	Helps students identify and use top-level structure in text for better comprehension and retention. Structures include cause-effect, comparision-contrast, time order, enumerations, and problem-solution. Key words "signal" author's use of one or more of these thought relationships in text. Vacca and Vacca, 1986.
POSSIBLE SENTENCES	A four-step procedure. 1) Teacher lists key terms which are adequately defined by their context. Target words are pronounced several times; 2) A student pairs any two words on the list and dictates a sentence using them. Teacher writes sentence on chalkboard. Then process is repeated using other word pairs; 3) Students read passage and check accuracy of sentences generated; 4) After reading and using text, original sentences are revised and corrected. Moore and Arthur, 1981.
PREDICTION	Prediction is a component of several current reading comprehension strategies used by teachers to improve comprehension of textual materials in the content areas. Prediction, really a hypothesis or conjecture, enables the reader to speculate, on the basis of what he or she already knows, what the topic in the text will be about. A prediction may result from a group discussion, or out of a pre-reading discussion. Each individual may make his/her own prediction. Then, the students read the test to confirm or disconfirm the prediction: Analysis of the original prediction and of, what clues might have been used more effectively leads to a new prediction, more reading, and so on.

STRATEGY	DESCRIPTION
PREP (Pre-reading Plan)	An assessment/instructional strategy which may be used diagnostically to estimate levels of background knowledge students bring to text assignments. Step 1: Brainstorm "tell me anything that comes to mind when you hear the word _____"; Step 2: After brainstorm, ask "what made you think of the word _____?"; Step 3: Reformulation of knowledge. "Before we read, based on our discussion, do you have may new ideas about _____?". Langer, 1981.
PYRAMID DIAGRAM	Technique for creating inclusive categories (reduction) for vocabulary term. Words are written on cards backed with magnets. Students group words and give a label for the grouped words. Labels are then made for the names of the groups and so on until a pyramid is formed, the top of which is the most inclusive term, or the category/topic overall. Solon, 1981.
QAR (Questions/ Answer/ Relationship)	Questions students answer are of 3 types as follows: 1) "Right there" questions are textually explicit; 2) "Think and search" are textually implicit questions; 3) "on your own" questions are answered from personal knowledge and background. Pearson and Johnson recommend these kinds of questions to guide comprehension of text. Pearson and Johnson, 1978.
QUESTIONS ONLY	An oral activity in which teacher gives students a topic. Students must learn all they can about topic by asking questions. No information given by teacher unless in response to question. Test will be given after questions have been asked. It is up to students to get information necessary to pass test by skillful questioning. After exercise, students read text with greater background knowledge and higher interest level. Manzo, 1980.
REQUEST	Acronym (i.e. ReQuest) for Reciprocal Questioning. Teacher and student read text silently, one sentence at a time. Teacher and student take turns asking and answering questions about each sentence. Teacher models mature questioning behavior, praises student when questions become more mature. Procedure continues until student can provide reasonable response to question, "What do you think is going to happen in remainder of selections? Why?". Manzo, 1969b.
RETELLING	Students tell and then retell what they recall from reading text. Retelling is a form of recitation, which has been established in research as a major factor in effective learning and retention of textual material.
SELF-GENERATED QUESTIONS	Refers to the process which "expert readers" use to determine whether they are meeting their goals. A means of achieving metacognitive cooperative control over reading. Baker and Brown, 1984.
SEMANTIC FEATURE ANALYSIS	A method of elaborating concept attributes by placing all attributes of a concept on one axis and examples of the concept on another. The task is to determine which examples have which attributes of the concept. Johnson and Pearson, 1984.
SEMANTIC MAPPING	Semantic map has four components: 1) Core question or concept (i.e., focus of map); 2) Strands-subordinate ideas; 3) Strand supports-details 4); strand ties-relationships of strands. Hanf, 1971; Sinatra, 1990.

STRATEGY	DESCRIPTION
SEMANTIC WEBBING	See "Semantic Mapping" (above) and "Webbing" (below). Freedman and Reynolds, 1980; Clewell and Haidemas, 1983; Sinatra, 1990.
SENTENCE SUMMARIES (One-Sentence Summary)	One-sentence summaries are required to: 1) identify the topic or subject of the summary; 2) tell what it begins with; 3) tell what's in the middle; and 4) tell what it ends with. Stanfill, 1977-78.
SQ3R	A study procedure involving the steps: Survey, Question, Read, Recite, Review. Probably the best-known of the study formulas, having, however, poor research validation. Robinson, 1946.
STORY MAP	A story map is a planning tool. It helps teachers analyze the story so that the questions asked during discussion will create a coherent framework for understanding and remembering the text. A story map defines what most stories have in common, i.e., key structural elements such as setting, problem/goal, major events, resolution. Beck, McKeown, McCaslin, and Burket, 1979.
STRIP STORY	Uses any type of paragraph, narrative, or expository text to enhance understanding of sequential order and conceptual logic in a paragraph. Each sentence is cut out and pasted. The student must place strips in logical order. This strategy can be used by individuals or a group.
STRUCTURED OVERVIEW	The teacher arranges a list of pre-selected vocabulary from text into a schema or diagram which depicts key relationships among the terms. Shows diagram to students before reading text. Students and teacher verbalize reasons for diagrammatic arrangement. Helps students learn information and store it in memory in meaningful ways. Herber, 1979; Mavrogenes, 1983.
THINK ALOUD	Think-aloud features the teacher verbalizing thoughts created while reading aloud. The teacher models the kinds of strategies a skilled reader uses during reading, and points out what he/she is doing to cope with a particular comprehension problem. Davey, 1983.
THREE-LEVEL GUIDES	Teacher-made questions to accompany the study of textual material. Working individually or in small groups, students respond to literal, interpretive, and critical/applied questions based on text selection. Herber, 1978.
TIME LINES	A visual display of events along a line, as in history, where specific time relations, antecedent events, and the flow of history can be examined on a linear continuum.
WEBBING	Starting with topic or concept in center, a web of attributes and association is drawn outward, as in a spider web. Clewell and Haidemas, 1983; Sinatra, 1990.

Appendix A.2

GLOSSARY REFERENCES AND RELATED MATERIALS

Alder, J. (1974). Individualized language arts. Weehawken, N. J.: Weehawken School District.

Allen, R. Van. (1976). Language experiences in communication. Boston: Houghton Mifflin.

Ausubel, D. P. (1960). The use of advance organizers in the learning and retention of meaningful verbal material. Journal of Educational Psychology, 51, 167-272.

Baker, L., & Brown, A. L. (1984). Metacognitive skills and reading. In Pearson, P. D., ed., Handbook of Reading Research. New York: Longman.

Barron, R. F. (1969). The use of vocabulary as an advance organizer in H. L. Herber and P. O. Sanders (Eds.). Research in reading in the content areas: First year report. Syracuse, NY. Syracus University, Reading and Language Arts Center.

Beck, I., McKeown, M., McCaslin, E. & Burket, A. (1979). Instructional deminsions that may affect reading comprehension: Examples of two commercial reading programs. Pittsburg: University of Pittsburgh, Language Research and Development Center Technical Report.

Betts, E. (1946). Foundations of reading instruction. New York: American Book.

Carr, E., and Ogle, D. (1987). K-W-L Plus: A strategy for comprehension and summarization. Journal of Reading, 30, 626-631.

Clewell, S. F., & Haidemar, J. (1983). Organizational strategies to increase comprehension. Reading World, 23, 314-321.

Culver, V. I. (1975). The guided reading procedures: An exprrimental analysis of its effectiveness as a technique for improving reading comprehension skills (Doctoral dissertation, University of Missouri-Kansas City. Dissertation Abstracts International, 36, 7062A.

Davey, B. (1983). Think aloud: Modeling the processes of reading comprehension. Journal of Reading, 27, 44-47.

DeBono, E. (1985. Six Thinking Hats. Boston: Little, Brown.

Eanet, M. G., and Manzo, A. V. (1976). REAP-A strategy for improving reading/writing/study skills. Journal of Reading, 19, 647-652.

Estes, T. & Vaughan, J., Jr. (1985). "Prereading Anticipation" (Chapter 9) Reading and Learning in the Content Classroom(2nd ed.). Boston: Allyn and Bacon.

Farnan, N. J. (1987). All the language arts for reading comprehension. Journal of Reading, 31, 274-275.

Fowler, G. L. (1982). Developing comprehension skills in primary grades through the use of story frames. The Reading Teacher, 36, 176-179.

Frayer, D. A., Frederick, W. C., & Klausmeir, H.J. (1969). A Schema for Testing the Level of Concept Mastery (Working Paper No. 16). Madison: University of Winconsin, Wisconsin Research and Development Center for Cognitive Learning.

Freedman, G. and Reynolds, E. (1980) Rnriching basal reader lessons with semantic webbing. The Reading Teacher, 33, 667-684.

Hanf, M. B. (1971). Mapping: A technique for translating reading into thinking. Journal of Reading, 14, 225-230, 270.

Heimlich, J. E., and Pittelman, S. D. (1986). Semantic Mapping: Classroom Applications. Newark, DE, International Reading Association.

Herber, H. L. (1978). Teaching Reading in Content Areas (2nd ed.) Englewood Cliffs, NJ: Prentice-Hall.

Hoffman, J. V. (1977). Intra-Act: A languaging in the content areas teaching procedure (Doctoral dissertation, University of Missouri-Kansas City). Dissertation Abstracts International, 38, 3248A.

Johnson, D. D., and Pearson, P. D. (1984). Teaching reading vocabulary (2nd ed.). New York: Holt, Rinehart and Winston.

Johnson, R. E. (1984, May). Michael Jackson: The World's Greatest Entertainer. Ebony, pp. 163-170.

Karlin, R. (1984). Teaching reading in high school: Improving reading in content areas (4th ed.). New York: Harper and Row.

Keller, B.W., and Holmes, J. (1979). The Guided Lecture Procedure. Journal of Reading, 22, 601-604.

Langer, J. A. (1981). From theory to practice: A prereading plan. Journal of Reading, 25, 152-156.

Legenza, A. (1978). Inquiry training for reading and learning improvement. Reading Improvement, 15, 309-316.

Lewkowicz, N. K. (1987). On the question of teaching decoding skills to older students. Journal of Reading, 31, 50-57.

Maier, N. R. F. (1963). Problem solving discussions and conferences: Leadership methods and skills. New York: McGraw-Hill.

Manzo, A. V. (1969a). Improving reading comprehension through reciprocal questioning (Doctoral dissertation, Syracuse University, Syracuse, NY 1968). Dissertation Abstracts International, 30, 5344A.

(1969b). The ReQuest Procedure. Journal of Reading, 13, 123-126.

(1970). CAT-A game for extending vocabulary and knowledge of allusions. Journal of Reading, 13, 367-369.

(1975). Guided reading procedure. Journal of Reading, 18, 287-291.

(1980). Three "universal" strategies in content area reading and languaging. Journal of Reading, 24, 146-149.

(1981b) Using proverbs to teach reading and thinking; or, come faceva mia nonna (the way my grandmother did it). The Reading Teacher, 34, 411-416.

(1983). "Subjective approach to vocabulary" acquisition (or "...I think my brother is arboreal!").

Manzo, A. V. and Casale, U. C. (1980). The five C's: A problem-solving approach to study skills. Reading Horizons, 20, 281-284.

(1985). Listen-read-discuss: A content reading heuristic. Journal of Reading, 28, 732-734.

(1990). Content Area Reading. Columbus, OH: Merrill.

Martin, R. W. (1968). Transformational grammar, cloze, and performance is college freshmen (Doctoral dissertation, Syracuse University, Syracuse, NY). Dissertation Abstracts International, 30, 70A.

Mavrogenes, N. (1083). Teaching implications of schema theory of comprehension. Reading World, 22, 295-305.

Moore, D., & Arthur, S. (1981). Possible sentences. In Dishner, E., Bean, T., and Readence, J., eds., Reading in the Content Areas: Improving Classroom Instruction. Dubuque, IA: Kendall-Hunt.

Muth, K. D. (1987). Teachers' connection questions: Prompting students to organize text ideas. Journal of Reading, 31, 254-259.

Nessel, D., Jones & Dixon (1989). Thinking Through the Language Arts. New York: MacMillan.

Ogle, D. (1986). K-W-L: A teaching model that develops active reading of expository text. The Reading Teacher, 39, 564-70.

Palincsar, A. S., and Brown, A. L. (1984). Reciprocal teaching of comprehension monitoring activities. Cognition and Instruction I, 117-175.

Palmatier, R. A. (1971). Comparison of four note-taking procedures. Journal of Reading, 14, 234-40, 258.

Palmatier, R. A., and Bennett, J. M. (1974). A notetaking system for learning. Journal of Reading, 17, 36-39.

(1974), Notetaking habits of college students. Journal of Reading, 18, 214-218.

Pauk, W., How to Study in College. (1989). Houghton-Mifflin Co., 144-150

Pearson, P. D., and Johnson, D. D. (1978). Teaching Reading Comprehension. New York: Hold, Rinehart and Winston.

Pichert, J. W., and Anderson, R. C. (1977). Taking a different perspectives on a story. Journal of Educational Psychology, 69, 309-315.

Robinson, F. (1946). Effective Study. New York: Harper Brothers.

Roby, T. (1983, April). The other side of the question: Controversial turn, the devil's advocate and reflective responses. Papers presented at the annual meeting of the American Educational Research Association, Montreal.

Santa, C. M., Dailey, S. C., and Nelson, M. (1985). Free-response and opinion-proof: A reading and writing strategy for middle grade and secondary teachers. Journal of Reading, 28, 346-352.

Simpson, M. L. (1986). PORPE: A writing strategy for studying and learning in the content areas. Journal of Reading, 29, 407-414.

Sinatra, R. (1990). Semantic webbing: A thinking strategy for improved reading and writing development: Part I. Teaching Thinking and Problem Solving, 12 (1), 1-4.

Smith, R. J., & Daner, V. L. (1984). A comprehension-monitoring strategy for reading content area materials. Journal of Reading, 28, 144-147.

Stanfill, S. (1977-78). "The Great American One-sentence Summary." Classroom Practices in Teaching Classroom English. Ouida Clapp, Chr., Urbana, IL: NCTE, 47-49.

Stauffer, R. (1969). Directing reading maturity as a cognitive process. New York: Harper and Row.

Taba, H. (1967). Teacher's Handbook for Elementary Social Studies. Addison-Wesley

Tierney, R. (J.), Readence, J. E., and Dishner, E. K. (1985). Reading Strategies and Practices: A Compendium (2nd ed.). Boston: Allen and Bacon.

Uttero, D. A. (1988). Activating comprehension through cooperative Learning. The Reading Teacher. 41. 390-395.

Vacca, R. T., & Vacca, J. L. (1986). Content Area Reading (2nd ed.). Boston: Little, Brown.

Vacca, J. L., (1989). Content Area Reading (2nd ed.) 3rd Edition. 198-199. Scott Foresman.

Appendix B

Selected Principles of Teaching and Learning in the
College Board Comprehension and Cognitive Instruction Program

1. Reading comprehension is a process in which information from the text and the knowledge possessed by the reader merge to produce meaning. Reading is thinking.

2. Questioning is a predominant technique used in content area classrooms. Teachers need to know how, when, and where to use questions and which questioning strategies best facilitate comprehension and class discussion of their text material.

3. The recognition of patterns of organization in text is a key strategy for reading comprehension and retention.

4. The prereading strategies of activating and then building background knowledge, arousing curiosity, and making predictions significantly facilitate reading comprehension. They prepare students to approach reading in a critical frame of mind. The same is true for strategies that are used during and after reading.

5. Writing is directly related to reading. One vital way to help students study and comprehend what they read is through the act of composing.

6. Teacher-made reading and study guides provide instructional support and direction for students enabling them to learn more successfully from difficult text.

7. Vocabulary taught and reinforced within the framework of concept development enhances reading comprehension.

8. Linking assessment with instruction provides a guide for the teacher when dealing with instructional differences which exist among students.